AN ELECTRIC ENERGY CONSERVATION MONETARY INCENTIVE PROGRAM IN AN URBAN SCHOOL DISTRICT

BY

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by

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During the 1970's school districts of the United States were confronted with both the rising costs and the waste of electric energy within school facilities. In an attempt to meet these challenges, alternative measures to conserve electric energy and reduce related costs were developed. One alternative was an electric energy conservation monetary incentive program (ECMIP), a plan which promoted the conservation of electric energy by returning a portion of the dollar savings related to the cost of electric energy to the local school's budget.

The major focus of the study was (a) to develop an ECMIP and (b) to determine the impact the program had upon the gross amount of dollars expended for electric energy and the gross consumption of electric energy in the Orange County, Florida, Public School System. Additionally, how the monetary incentive award funds received at the local school were allocated was determined.

The ECMIP was developed by a task force drawn from a cross section of the school district's management personnel who relied on related literature and experience in other districts as a basis for determining the program's components. These components related to the difference in electric energy consumption for a base year and current year: adjustments in usage due to changes in population, square footage, hours of operation, and the like; a monetary incentive divided equally between the school generating it and the central office; and, a special award for the greatest savings within selected categories of schools.

To determine the impact of the program, billings for electric energy for nine months of a base year (FY 1977-78) and nine months of a current year (FY 1979-80) were reviewed. The data were analyzed for each of the district's 98 schools, for five categories of schools, and for all schools combined. An analysis was made of a checklist submitted by each school principal to determine the relative proportion of the total dollars received at the school level which had been allocated to either instructional or support categories.

Based upon the analysis of data, it was found that 68 of the 98 schools studied had a decrease in dollar costs which totaled $200,128, and 85 of the 98 schools experienced decreases in electric energy consumption which totalled 7,774,693 KWH. Monetary incentive awards which totaled $194,097.22 were returned to 85 schools, and 85.64% of the incentive awards were allocated to items within the instructional category. It was concluded that (a) school district personnel with a variety of organizational responsibilities can develop cooperatively and

implement an ECMIP; (b) it is possible to develop a viable and equitable formula for allocating monetary incentive awards to local schools with a minimal number of components in the formula; (c) there was a gross dollar savings in four of the five categories of schools and a decrease in the consumption of electric energy in all categories of schools regardless of size of school or number of schools in a category; (d) there was a greater gross dollar savings and a greater decrease in the consumption of electric energy during the mid-winter and spring months than during the fall and early winter months; and (e) when the dollars required for funding the monetary incentive award were considered, the implementation of the program resulted in an increase in total dollar costs. Even though there was an increase in overall dollar costs, the implementation of the monetary incentive program did result in a substantial savings in the consumption of electric energy, a gross dollar savings, and the retention of incentive award funds within the school district rather than their use as payments to utility companies.

CHAPTER I

INTRODUCTION AND BACKGROUND

Industrialists, business and government leaders, and economists have recognized that electric energy has the potential to provide a stimulus to the world's economy since they first utilized that potential to bring the world out of the economic depression which lasted from 1873 through 1895 (Barraclough, 1976, p. 26). After 1895 industrial planners and economists capitalized on the continuing development of electric energy as an economic force, and by 1979 their efforts to increase the use of this energy source had led to a change in the lifestyle, available economic opportunities, and social values of a major portion of the world's population (p. 27). Electric energy had been abundant, cheap, and plentiful in the 80 years between 1895 and 1976, and as a result it was recognized as the force which had the most significant impact upon the development of the economy of the United States during that period of time (pp. 26-30).

The consumers of the United States doubled their demand for electric energy each 20 year period between 1925 and 1975. By 1977 increased consumer usage had resulted in a rise in this rate of increase to 100% every nine years (Zamm & Samuel, 1977, p. i). The demand for electric energy increased as the consumers of the United States became accustomed to the advances which resulted from their industrial and economic endeavors as well as the corresponding improvements in their lifestyles. Industrial planners and economists continued to capitalize upon the development of abundant and cheap energy as they completed plans to further strengthen the nation's economy (Barraclough, 1976, pp. 26-27). They were utilizing a resource for which the real price in the United States fell 28% in the decades of the 1950's and 1960's (Executive Office, 1977, p. vii).

The availability of cheap electric energy and the fact that the industrialists of the United States did not have to be concerned relative to either its price or availability resulted in the development of a stock of capital goods such as homes, office and institutional buildings, automobiles, and factory equipment that used energy inefficiently. The consumers of electric energy in the United States, a nation with only 6% of the world's population in 1977, utilized approximately 1/3 of the energy consumed in the entire world in 1977 (Zamm & Samuel, 1977, p. i). A historical review of total energy usage from all sources, of which electric power is the most widely used, will reveal that in 1973 each consumer in the United States used nearly nine times as much energy as the average consumer in the rest of the world (Educational Facilities Laboratories, 1973, p. 1).

During fiscal years 1973 and 1974 the world's consumers of electric energy witnessed a quadrupling of world oil prices (Executive Office, 1977, p. vii). Economists, planners, and consumers immediately began assessing the world's energy situation and its impact upon the economy of the United States. They found that a complicated maze of supply and demand, and the interrelations and complications which existed between that maze and environmental, political, social, and economic factors, had resulted in the price escalations and resource depletions with which the world's consumers were faced (Neill, 1977, p. 7). It was determined that the world's consumers were caught in a period of transition between an era of cheap, plentiful energy and an era of expensive, plentiful energy; an era in which it was estimated that there would be new sources of energy available which would cost from two to three times as much as 1978 world oil prices in 1978 dollars (Gushee, 1978, pp. 13-14). Gushee listed the areas of concern which had evolved from his assessment of the energy situation as follows: "(1) the economic role of energy; (2) oil import dependence; (3) oil and gas supply depletion; and (4) the social role of energy" (p. 2). In an assessment of the total energy situation the electric energy consumer of the 1970's had to reflect upon each of the concerns as a major factor. The primary thrust of the study reported herein was upon the financial impact which the rising costs of electric energy had had upon the local school districts of the United States. Therefore, emphasis was placed upon the fourth area of concern, the social role of energy, and the impact that the cost of purchasing electric energy had had upon the funds made available to operate a local school district.

Neill (1977) summarized the energy situation which faced the local school districts of the United States as follows, "The joy ride is over for the nation and the nation's schools in their use of abundant, low-cost energy" (p. 5). The impact of the rising costs of electric energy during the 1970's was illustrated by the fact that energy bills for the public schools of the United States rose 48% from the end of school year 1972-73 through school year 1974-75, an increase of

$514,000,000 in additional dollars for those two years. The $514,000,000 increase would have been sufficient revenue to enable the school boards of the United States to fund 43,000 teaching positions and more than the total yearly cost of textbooks at 1974-75 costs (Savage, 1976). It was accepted that not all costs for electric energy could be eliminated; however it was apparent that the school districts of the United States were paying a big price for energy. In 1978 it was predicted that the cost would continue to rise and in a speech before the Annual Conference of the Council of Educational Facility Planners the former Research Director for the American Institute of Architecture, John Eberhard, Architect, stated:

> In 1973 the average cost per student for energy in the United States was estimated at $20; by 1978 it had risen to $57; by 1980 it is estimated it will be $60; and the most realistic estimate for 1985 is $280. (Note 1)

Mr. Eberhard's stated cost of $57 per student for 1978 was substantiated by the reported average cost of $52 per student for electric energy in the Orange County, Florida, Public School System for the 1977-78 school year (Boyd, Note 2).

In 1977 the Council of Educational Facility Planners reported the following:

> Approximately one-third of all energy used by our nation is consumed in operating buildings. Educational facilities are the largest group of institutional buildings. In schools alone, the potential for saving our finite [energy] resources is immense. (CEFP, 1977, p. 3)

According to a publication which was produced by Tenneco, Inc. (1978) school administrators, teachers, support personnel, and students could have reduced energy consumption in the school facilities of the United States by 1/3 in 1978 had they employed conservation measures which would have enabled them to effectuate a savings while not reducing or disrupting services (p. III). There were many factors which contributed to the alleged waste as set forth in the Tenneco publication. Among the factors most commonly cited were: (1) failure on the part of school personnel to believe that an energy crisis existed (Neill, 1977, p. 8); (2) the fact that 1/2 of the schools in the United States were constructed in one short building boom from 1955 to 1965, when as a result of the post-World War II "baby boom" space was critical, energy was cheap and plentiful, and operating costs received little attention (Tenneco, 1978, p. 1); (3) failure of school district personnel to make a firm commitment to the development and implementation of energy conservation/management programs (Bickle & Emry, 1979); and (4) failure of school district personnel to develop and implement curriculum materials to provide the youth of the nation with

> the information and insights necessary to deal rationally with energy needs, changing lifestyles, environmental concerns, and the control of energy decisions that affect us all. (Freeman, 1974, p. 50)

School administrators of the latter part of the 1970's were faced with both the rising cost of electric power and the inefficient use of that power once purchased. Responses to both challenges were assumed to be possible and it became one of the responsibilities of the school administrators to discover, recognize, and implement them. The following quote represented the typical 1978 attitude of school administrators of the United States:

> Much has happened on the way from the Franklin stove to the all-electric kitchen, but we do have something in common with that self-reliant generation of a century ago. We too, are beginning to discover and understand the importance of team work, thrift, and resourcefulness. (Tenneco, 1978, p. 6)

The fact that the cost of total energy as utilized in the public schools of the United States rose from $1,100,000,000 in school year 1971-72 to $4,800,000,000 in school year 1978-79, an increase of 376%, resulted in a renewed emphasis on team work, innovation, thrift, and resourcefulness (Jones & Alubicki, 1979). A change in attitude had taken place as shown by a comparison of the Tenneco quotation with the following 1974 statement:

> Ten years ago those of us who were involved in energy policy could hardly buy space in newspapers to talk about the subject of energy, much less find anyone interested in listening to us. (Freeman, 1974, p. 50)

The following quotation from a document prepared by a group of college and university business officers provided further evidence that concern had been expressed relative to the energy crisis:

> The energy crisis is not likely to pass quickly or quietly from our lives. While no one can predict with certainty what fuel shortages will mean for our accustomed way of life this winter or beyond, it seems likely that more fundamental alterations in our patterns of work, study and recreation are in prospect. (National Association of College and University Business Officers, 1977, p. 131)

Professor Charles W. Moore of the University of California at Los Angeles (cited in LeBlanc, 1978) wrote:

> Energy, I'm prepared to believe, is the most important quality in the world, and understanding it, and making it, collecting it, using it and saving it are the most important human acts. (p. 5)

The energy conservationists of the 1970's recognized that the energy situation had to be viewed from both an economic and humanistic standpoint and that it was not sufficient to accept a plan of action based solely upon financial projections. They concluded that to do so would fail to recognize that between 1977 and 2027 two primary energy sources, petroleum and natural gas, could be totally depleted. The conservationists urged that steps be taken to conserve finite energies and make them last as long as possible while the search for and the development of new sources of energy was expedited (CEFPI, 1977, p. 1).

Ingalls (1977) identified the following areas which could be explored in order to determine the measures which would

> bring order out of the morass of information, ideas, equipment, and pressures that confront us when we consider conservation. . . .
>
> .Building design and construction projects
> .Operational projects
> .Maintenance projects
> .Educational curriculum projects
> .Communications projects
> .Transportation projects. (p. 7)

Within each of the areas listed there are numerous alternative approaches which, if implemented, could result in the conservation of the amount of energy consumed in the public schools of the United States. Several of these alternative approaches are explored in the review of literature chapter.

A commonly held view among those responsible for the construction, maintenance, and operation of school facilities was that within the area of "operational projects," school administrators were provided with the most easily accomplished means through which energy conservation and management projects could be initiated (Ingalls, 1977). Ingalls observed that energy conservation programs could be initiated in the operational area which would require no additional budgeted funds and could be accomplished with existing manpower. He further observed that the key to the success of operational projects was a strong commitment on the part of all school district personnel to conserve energy and effectively monitor each energy conservation idea. This observation was supported by others who had written about energy conservation and management (American Management Association, 1977, p. 19; Council of Educational Facility Planners, 1977, p. 10; Educational Facilities Laboratories, 1973, pp. 4-8; Tenneco, 1978, p. 6).

Among the alternatives which were available within the scope of operational projects was that alternative known as an electric energy conservation monetary incentive plan. An electric energy conservation monetary incentive plan can be defined as a plan to promote the conservation of electric energy through the practice of returning a portion of the dollar savings related to the cost of electric energy to the school building administrator to be utilized as a supplement to the local school's operating budget. These plans were also known as cost avoidance return programs, rebate programs, and monetary reward programs, and have been implemented as motivators for the conservation of electric energy (Hill, 1976, pp. 1-3; Hillsborough County, 1978, pp. 11-12; Ingalls, 1977; Lee County, 1978, pp. 6-6a; Palm Beach County, 1977, p. 23). School administrators faced with meeting the challenge of curbing the rising cost of increased usage of electric energy as well as the increased usage itself recognized that electric energy conservation monetary incentive programs did meet the test of providing a means to reduce electric energy usage with no additional budget or manpower allocations.

The historical factors which relate to the status of the world's energy situation and its impact upon the consumers of the United States, the rising cost of electric energy and the impact of those costs upon the funds made available to the school districts of the

United States, the apparent waste of electric energy that exists within the school facilities of the United States, and the fact that there are alternative measures which when implemented can result in the conservation of electric energy appeared to justify the investigation which is reported herein. Specifically, it was believed that the results of the investigation might be utilized to determine the impact that an electric energy conservation monetary incentive program had upon the consumption of electric energy in the Orange County, Florida, Public School System and to assess whether or not such a program is a viable tool to be utilized by school administrators faced with rising electric energy costs and the corresponding need to conserve and manage the electric energy purchased. Further, it was assumed that the conclusions reached as a result of the investigation, even though not directly applicable, might assist the policy makers of the public schools of the United States in determining whether or not to pursue the implementation of an electric energy conservation incentive monetary program. Thus, the study was seen as a contribution to the body of knowledge relative to the effectiveness of the various energy conservation measures which have been implemented in the school districts of the United States.

The Problem

Statement of the Problem

The focus of the investigation was on an electric energy conservation monetary incentive program for the Orange County, Florida, Public School System. Attention was given to program development and implementation during the 1979-80 school year, a determination of its impact on the gross amount of dollars expended for electric energy and gross consumption of electric energy, and a determination of the manner in which the monetary incentives to the local school level were allocated. In regard to the impact of the program within the Orange County, Florida, Public School System answers to the following questions were sought.

1. How did the monthly and total dollar costs of electric energy from 9/1/79 through 5/31/80 compare with the dollar costs during the period from 9/1/77 through 5/31/78 for (a) each school center, (b) the elementary schools, (c) the special education centers, (d) the junior high schools, (e) the senior high schools, (f) the adult vocational-technical schools, and (g) all the schools combined?
2. How did the monthly and total amounts of electric energy consumed from 9/1/79 through 5/31/80 compare with the amounts consumed during the period from 9/1/77 through 5/31/78 for (a) each school center, (b) the elementary schools, (c) the special education centers, (d) the junior high schools, (e) the senior high schools, (f) the adult vocational-technical schools, and (g) all the schools combined?
3. How did the total dollar costs expended for electric energy from 9/1/79 through 5/31/80 compare with the costs from 9/1/77 through 5/31/78 after adjustment for the cost of funding the monetary incentive program (which takes into consideration changes, if any, in student population, square

footage, hours of operation, and changes in facility design and major electrical equipment) for (a) each school center, (b) the elementary schools, (c) the special education centers, (d) the junior high schools, (e) the senior high schools, (f) the adult vocational-technical schools, and (g) all schools combined?

4. How were the dollars received at the local school level as an electric energy conservation monetary incentive allocated by local school personnel by selected categories of items and relative proportion of the award spent for instructional and support items for (a) each school receiving such an award, (b) each elementary school receiving an award, (c) each special education center receiving an award, (d) each junior high school receiving an award, (e) each senior high school receiving an award, (f) each adult vocational-technical school receiving an award, and (g) all schools receiving an award.

Delimitations

The following confinements were observed.

1. The development, implementation, and determination of the impact of the electric energy conservation monetary incentive program was confined to one large urban school district, the Orange County, Florida, Public School System, and to the 106 school centers of the system which were categorized as follows: 67 elementary schools, 5 special education centers, 19 junior high schools, 10 senior high schools, and 5 adult vocational-technical schools. However,

certain schools were not included in the investigation. In one instance a senior high school and an elementary school were on the same electric meter; this was also the case with an elementary school and a special education center. There was no base year (1977-78) information available for two elementary schools, one special education center, and one adult vocational-technical school. Therefore, when comparisons by individual school and school level were done, the four elementary schools, the two special education centers, the one high school, and the one adult vocational-technical school were eliminated. Thus, for the analysis by level and individual school there were 63 elementary schools, 3 special education centers, 19 junior high schools, 9 senior high schools, and 4 adult vocational-technical schools.

2. The comparison of dollar costs and the amounts of electric energy consumed were confined to one time period only, 9/1/79 through 5/31/80, as compared to 9/1/77 through 5/31/78. Furthermore, the comparison was for each month within the time period and for the total.
3. The calculations of the amount of electric energy consumed were confined to kilowatt-hours (KWH).
4. The calculations of the dollar cost of electric energy were confined to the current value of the United States dollar and there was no attempt to equalize dollars based upon the inflationary spiral.
5. The information utilized in the calculation of the dollar costs of electric energy and the amounts of electric energy

consumed was confined to that maintained in the office of the Supervisor of Energy Utilization of the Maintenance Section of the Orange County Public School System and there was no attempt to establish the validity of these data.

6. Investigation of the manner in which electric energy conservation monetary incentives were allocated at the local school level was confined to those allocations as identified by the local school principal by item and proportion of total dollars allocated to instruction and support.
7. The variable factors, other than the gross amount of electric energy consumed, which were utilized in the development of the proposed electric energy conservation monetary incentive program were confined to changes in student population, changes in the amount of square footage in the school facility, changes in the hours of operation of the school facility, and changes in facility design and major electrical equipment as designated by the Supervisor of Energy Utilization and the Director of Maintenance of the Orange County Public School System.

Limitations

The following were recognized as having an impact upon the results of the investigation:

1. The Supervisor of Electric Energy Utilization and the Director of Maintenance of the Orange County Public School System were responsible for the identification of those changes in facility design and major electrical equipment,

which had noticeable impact upon electric energy consumption. To the extent that they failed to note the existence of these changes there could be inaccuracies in the identification of the selected changes which could impact upon electric energy consumption quite apart from the increase and decrease in actual utilization.

2. The investigation took place during the first year of the implementation of the program and therefore there was the possibility that changes in electric energy consumption patterns were due to a "Hawthorne" effect and not the monetary incentive program.
3. Since the setting of the study was a single school district for a given time period, generalizations of the results of the investigation about electric energy consumption to other similar districts must be regarded as suggestive and not conclusive. That is, no external validity for the results could be claimed.

Definition of Terms

Adult vocational-technical school. An educational plant that houses adults who enroll in courses specifically designed to prepare them for immediate employment in a trade such as automotive body repair, printing, computer programming, and health occupations.

Base period. The selected time unit along with consumption levels or dollar amounts to which future usage or costs were compared.

Changes in facility design. Changes in an educational plant, which could impact the consumption of electric energy, through the accomplishment of such tasks as the addition of insulation to the plant, the installation of new windows, the installation of equipment to reduce ventilation cycles, and the use of caulking and weather stripping to reduce both leaks and heat gain.

Changes in major electrical equipment. Changes in an educational plant which result in the addition or deletion of items of equipment which utilize electric energy to accomplish the task for which they were designed. Included are items such as the number of heating or cooling units, the number of electric motors, the number of electrical appliances, or the number of lighting fixtures.

Cost-avoidance. The amount of money that school district's might have been paying for electric energy if conservation and usage reduction measures had not been implemented (Stephan, 1977).

Cost per student for energy. The cost as determined by dividing a school district's total expenditures for energy at the individual school level for a given time period by the total number of students enrolled in a district at a given time.

Degree-day. A unit of mean daily outdoor temperature representing one degree of difference from a standard temperature, usually 65°F. Ten days, each with a mean temperature of 75°F, are equal to 100 degree-days.

Educational plant. The physical features necessary to accommodate students, faculty, and staff and the activities of the educational program of each school center. The educational plant includes site, playgrounds and equipment, athletic fields, and the building or buildings located thereon with all their mechanical and educational equipment. The term is used synonymously with school facility and educational facility.

Elementary school. Some combination of grades K-6 that is housed in an educational plant.

Energy conservation devices. The mechanical devices which if installed in a building could result in the reduction of the consumption of energy.

Equalized dollars. The dollar which would result from calculation which would translate the current value of the monetary unit of a United States dollar into terms of the value of the United States dollar at some other period of time.

Fuel adjustment variation. A dollar amount that is added to a base cost of electric energy per KWH which compensates for fluctuation in the price per barrel of oil.

Gross amount of dollars expended. The sum total of all dollars expended for a given item without any reflection of the influence of adjustment factors.

Gross amount of energy consumed. The sum total amount of a given energy source consumed without any reflection of the influence of adjustment factors.

Junior high school. An organizational grouping of grades 7-9 that is housed in an educational plant.

Kilowatt hour (KWH). The unit of energy that is equal to that expended by one kilowatt, a unit of electrical energy equal to 1.34 horsepower, in one hour.

Local school principal. The administrative head of an individual elementary school, special education center, junior high school, senior high school, or adult vocational-technical school.

Monetary incentive award. The amount of money returned to an operating unit, derived from the savings of operational dollars, to serve as an incentive for the achievement of additional savings.

Payback. The time it takes for expected energy savings to recover the costs of investment.

Senior high school. An organizational grouping of grades 10-12 that is housed in an educational plant.

Special education center. An educational plant that houses children who have either physical handicaps, emotional problems, learning disabilities or a combination thereof.

Procedures

Overview

The investigation was conducted for three specific purposes: a) to develop and implement an electric energy conservation monetary incentive program; b) to determine the impact of the program on the gross amount of dollars expended for electric energy and the gross consumption of electric energy at both the district and local school level; and c) to determine the manner in which the monetary incentives received at the local school level were allocated. The procedures which were utilized to accomplish the three purposes are presented in the sections which follow.

Development and Implementation of the Program

The development and implementation of electric energy conservation monetary incentive program (ECMIP) entailed the following steps:

1. An energy conservation planning task force (PTF) was appointed by the Deputy Superintendent for Support Services of the Orange County, Florida, Public School System. This task force was comprised of the following management personnel of the system: the Deputy Superintendent for Support Services who served as chairman, the Deputy Superintendent for Instruction, the Assistant Superintendent for Facilities Services, the Director of Maintenance, the Director of Accounting, the Supervisor of Energy Utilization, the Secondary School Curriculum Specialist for Science Education, two elementary school principals, one junior high school principal, and one senior high school principal.
2. The PTF reviewed the then current literature related to ECMIP's which had been implemented in other school districts in an attempt to determine the basic characteristics of the plans and information relative to the degree of success experienced as a result of their implementation.
3. The PTF identified the most commonly cited components from the ECMIP's reviewed in the literature and developed a definition of an electric energy conservation monetary incentive program which was acceptable to all members of the PTF.

4. On behalf of the PTF, the two deputy superintendents presented a conceptual overview of an ECMIP, including the consensus definition as developed by the PTF, to the District Superintendent and the School Board of Orange County. The deputy superintendents secured the endorsement of the development of an Orange County School System ECMIP from the Superintendent and the School Board as well as a commitment that the PTF could expend the necessary time and resources to accomplish the task.
5. Once the endorsements were received the PTF proceeded to develop the components of the ECMIP. The members of the PTF were informed by the chairman that there were to be two mandatory components of the proposed ECMIP: (a) the establishment of a base year for the system, the 1977-78 school year; and, (b) the restriction that the funds which would be derived from the monetary incentives would be expended only on projects which would be of direct benefit to the students. The 1977-78 school year was selected as the base year due to the fact that it was the first school year for which complete monthly records relative to the consumption and cost of electric energy had been maintained for each educational plant. Furthermore, no formalized effort relative to electric energy conservation was in existence during the 1977-78 school term, a factor which was not true for the 1978-79 school term.
6. The PTF reviewed the availability of an electric energy utilization data base for the the Orange County Public

School System, assessed its utility in the application of the proposed ECMIP, and recommended the implementation of some procedural changes to the assistant superintendent responsible for management information. The assistant superintendent initiated the requested procedural changes to provide an electric energy utilization data base compatible with the proposed ECMIP.

7. The PTF followed the activities related to the identification of components and the assessment of the data base with the development of an ECMIP allocation formula and the provisions for the distribution of the monetary incentives. The calculation of the amount of the monetary incentive to be given to each eligible school was to be through the application of a mathematical formula. The PTF was instructed to develop a formula which utilized the number of kilowatt hours used during a base year and the number used during the current year adjusted for changes in student population, square footage, hours of operation, and changes in facility design and major electrical equipment.
8. The ECMIP, as developed, was presented in writing by the members of the PTF to the members of the entire management team of the Orange County Public School System and each team member's written reactions and suggestions were solicited. The PTF reviewed the reactions and suggestions from the members of the management team and made such revisions as were deemed to be necessary as determined by a simple majority of the membership of the PTF.

9. The members of the PTF presented the proposed ECMIP to the school board and superintendent and requested authorization for implementation of the ECMIP. The implementation of the ECMIP was authorized and was designated to be the responsibility of the Supervisor of Energy Utilization, Department of Maintenance, Orange County, Florida, Public School System.

The ECMIP is described in full in Chapter III. Included is a description of each component and an illustration of the basis for making the awards to the local schools.

Determination of Impact on Electric Energy Use and Expenditures

The determination of the impact of the electric energy conservation monetary incentive program (ECMIP) was by a comparison of the gross amount of electric energy consumed and the gross amount of dollars expended on both a monthly and total basis at the district and local school level from 9/1/79 through 5/31/80 as compared with 9/1/77 through 5/31/78. Specifically, the following steps were included in the determination of the impact of the program:

1. The energy utilization supervisor maintained records containing information relative to month to month electric energy usage and the related costs. The records were maintained for each school separately and for the district total categorized into five groupings, elementary schools, special education centers, junior high schools, senior high schools, and adult vocational-technical schools. As noted previously, there were 106 school centers in the Orange

County, Florida, Public School System which were categorized as follows: 67 elementary schools, 5 special education centers, 19 junior high schools, 10 senior high schools, and 5 adult vocational-technical schools. However, certain schools were not included. In one instance a senior high school and an elementary school were on the same electric meter; this was also the case with an elementary school and a special education center. There was no base year (1977-78) information available for two elementary schools, one special education center, and one adult vocational-technical school. Therefore, when the comparisons by individual school and school level were done, the four elementary schools, the two special education centers, the one high school, and the one adult vocational-technical school were eliminated. Thus, for the analysis by level and individual school there were 63 elementary schools, 3 special education centers, 19 junior high schools, 9 senior high schools, and 4 adult vocational-technical schools.

2. The dollar costs of the electric energy consumed for each month, 9/1/77 through 5/31/78, were subtracted from the dollar costs for the time period 9/1/79 through 5/31/80. The results of the subtractions indicated the gross increase or decrease in the cost of electric energy, on both a monthly and total basis, as follows: a) for each elementary school, individually and for all elementary schools collectively; b) for each special education center individually, and for all special education centers collectively; c) for each junior

high school individually, and for all junior high schools collectively; d) for each senior high school individually, and for all senior high schools collectively; e) for each adult vocational-technical school individually, and for all adult vocational-technical schools collectively; and, f) for all schools of the district collectively.

3. The dollar costs as calculated in Step 2 were adjusted by the cost of funding the monetary incentives generated by individual schools to provide the net amount of increase or decrease for each school, the schools within a grade grouping collectively, and all schools of the district collectively. The amount of each adjustment was determined by the calculation of the amount of the monetary incentive earned each eligible school through the application of a mathematical formula. The formula, which is described in detail in Chapter III, utilized the number of kilowatt hours used during a base year and the number used during the current year adjusted for changes in student population, square footage, hours of operation, and changes in facility design and major electrical equipment.
4. The amounts of electric energy consumed for each month and the total period from 9/1/77 through 5/31/78 were subtracted from the amounts of electric energy consumed from 9/1/79 through 5/31/80. The results of the subtractions indicated the gross increase or decrease in the amounts of electric energy consumed, by month and in total, as follows: a) for each elementary school individually, and for

all elementary schools collectively; b) for each special education center individually, and for all special education centers collectively; c) for each junior high school individually, and for all junior high schools collectively; d) for each senior high school individually, and for all senior high schools collectively; e) for each adult vocational-technical school individually, and for all adult vocational-technical schools collectively; and, f) for all schools of the district collectively.

The information which resulted from the calculations which were made in fulfillment of the requirements of Steps 3, 4, and 5 are presented in both narrative and tabular formats within Chapter IV.

Local School Allocation of Incentive Awards

The determination of the manner in which the monetary incentive awards to the individual schools were allocated by school level personnel was accomplished through the distribution of a checklist to the principal of each school center. Using the checklist, the principal of each school center was requested to indicate those areas to which supplemental school budget allocations were made through the use of the monetary incentive rewards received.

The checklist contained two major categories: instruction and support. Under the category of instruction there was a listing of the following items: media center audio-visual materials, classroom audio-visual materials, library books, magazine and periodical subscriptions, supplemental classroom instructional materials, supplemental classroom instructional equipment, physical education equipment, music and musical instruments, art materials, and athletic equipment. The items listed under support were as follows: construction of student-related facility addition, renovation or remodeling of student-related facilities, improvement of outdoor physical education areas, improvement of outdoor athletic areas, and purchase of student furniture. Each principal was requested to indicate the relative proportion of the total dollars received as a monetary incentive which were spent for instructional and support items.

Once the checklists were received from the principals, composite listings of the items checked for each of the two major categories were made. The tabulated composite listings are reported within Chapter IV for all elementary schools collectively, all special education centers collectively, all junior high schools collectively, all senior high schools collectively, all adult vocational-technical schools collectively, and all schools collectively.

Organization of the Remainder of the Report

Chapter II contains a review of related literature and empirical investigations. Chapter III contains a description of the model electric energy conservation monetary incentive program as planned. Chapter IV contains data related to the comparisons of gross dollars expended and the gross amount of electric energy consumed, and the manner in which monetary incentive rewards were allocated. Chapter V contains a discussion of the findings. Chapter VI contains the summary and conclusions drawn from the investigation.

CHAPTER II

REVIEW OF RELATED LITERATURE

The body of literature related to electric energy management and conservation increased significantly during the 1970's. Authors have approached the subject from a number of different perspectives; accordingly the review has three major focuses: (1) the establishment of a need for managers of corporations, institutions, and public agencies to be concerned about the conservation of electric energy; (2) the exploration of ideas advanced by authorities in the field of electric energy conservation and a review of electric energy savings concepts and models; and, (3) the reporting of empirical investigations related to energy conservation monetary incentive programs which have electric energy conservation components.

The Need for Energy Conservation

The majority of the consumers of electric energy in the United States first realized that conservation of that energy source could be an essential step in the preservation of the nation's standard of living when they were confronted with a quadrupling of world oil prices during fiscal years 1973 and 1974 (Executive Office, 1977, p. vii). Business and industrial leaders began to ask questions relative to the use of energy in their organizations and whether or not they should initiate steps to conserve the use of energy, especially that form which was most widely used, electric energy (Educational Facilities Laboratories, 1973, pp. 74-79). These leaders concluded that there were two basic reasons why the users of industrial energy should consider initiating conservation measures: the national interest and profit (American Management Association, 1977, p. 5). There was a consensus among the leaders of the business and industrial community of the United States that, "Profit--central to the free enterprise system that forged our progress--is the very same drive that will help us out of our current energy squeeze" (p. 5).

A common national cause and profit considerations became the conservational incentives for a business community which was faced with the fundamental fact that, "Within about four generations, the bulk of the world's supply of oil, created over hundreds of millions of years, will have been substantially consumed" (Executive Office, 1977, p. 111). It became a commonly accepted fact that, "A large and complex energy system has been created over a long period of time, and is thus difficult to stop or redirect" (National Association of College and University Business Officers, 1977, p. 13). Managers of businesses, institutions, and governmental agencies began to re-discover technology, equipment, and procedures which had been available for a number of years but had not been utilized during the days of cheap and abundant energy (Stephan, 1977).

The compatibility of energy conservation and that economic growth which results in profit was demonstrated in the following quote from a 1977 publication of the Executive Office of the President, The National Energy Plan:

> Energy conservation, properly implemented, is fully compatible with economic growth, the development of new industries, and the creation of new jobs for American workers. Energy consumption need not be reduced in absolute terms; what is necessary is a slowing down in the rate of growth by making adjustments in energy consumption now, the U.S. can avoid a possibly severe economic recession in the mid-1980's. (p. x)

The business and industrial planners of the 1970's were faced with a choice of whether or not to implement an orderly conservation program or face the development of an emergency program under crisis conditions at a later date.

Neill (1977, p. 13) reported that most authorities in the field of energy were in agreement that conservation, coal, and nuclear energy were the three options which held the key to the energy future of the United States. There was little that the average business or industrial manager of the United States could do to develop the potential of either coal or nuclear energy. Exploration of the options related to energy conservation presented a different matter, and industrial and business managers began to pursue this option (American Management Association, 1977, pp. 5-6)

In 1974 the members of the Aluminum Association of the United States established a goal of reducing energy consumption within that association by 10% by the year 1980. The members of the Aluminum Association had historically consumed huge amounts of energy in their industry and they demonstrated that conservation would work when they achieved a 5% reduction in energy consumption in less than two years into the program. The membership of the American Paper Institute established a similar goal, 10% in six years, and they also were ahead of schedule when they reached a reduction of 4.1% at the end of two years. Two other industries whose membership was reported as exceeding established conservation goals were the meat packing industry with 7% of a 10% goal met in two years and the glass industry which exceeded its 1980 goal of a 15% reduction in 1976 (American Management Association, 1977, p. 6). Each industry established its own rate of progress but together they were working to reduce energy needs and thus serve the national interest and protect economic growth and the resulting profits.

The energy crisis which impacted business and industry in fiscal years 1973 and 1974 also had a significant impact upon the school districts of the United States. The following quotation from Educational Facilities Laboratories (1973) described the energy situation faced by school boards of the United States during the early 1970's:

> But suddenly, after three centuries of plundering the resources of the continent, we confront an alarming fact looming in the path of heedless "progress." The earth's formerly limitless resources are becoming evermore palpably finite and, therefore, costly.
>
> There is no painless solution on the technological horizon, we simply must learn to conserve energy.
>
> Associated with these grim facts is one significant and happy discovery: we are finally realizing that energy conservation usually saves money. Economy almost necessarily results in the long run, and often in the short run as well.
>
> Thus, school boards continuing energy-wasting practices can expect soaring operating costs . . . we can expect a roughly three-fold multiplication of energy costs over the next decade. (p. 1)

Savage (1976) estimated that a savings of 5-20% could be realized by local school districts through common sense conservation efforts. Tenneco (1978, p. 11) suggested that school administrators in a typical school in the United States could reduce energy consumption in that school by 1/3 through the implementation of conservation measures. Dorgan (1978) held that, "A proper energy management program will reduce energy usage by 50% without adverse effects on educational quality or facilities" (p. 4). Stephan (1977), writing based upon his background as a staff member with the United States Department of Commerce and the United States Department of Energy, stated:

> There is a vast body of knowledge and experience in this field, (energy reduction, plant maintenance practices, and rectifying building deficiencies) and in many instances reductions of 50% or more (in the amount of energy utilized) can be achieved. (p. 33)

According to statistics provided by the American Association of School Administrators, the median energy cost/consumption per pupil for the nation rose from $20.07 per pupil in the 1972-73 school term to $29.70 per pupil in the 1974-75 school term, a 48.3% change (Neill, 1977, p. 18). In addition, it was reported in the same publication that school district budgets for heat and utilities had been increased 174% between 1969 and 1977 (p. 19). As school administrators assessed the impact of the energy situation of the 1970's and the increases in costs, they made such statements as, "To school business managers the energy crisis is a continuing disaster" (Savage, 1976, p. 353).

The literature of the 1970's relative to the energy situation contained evidence which validated the premise that the costs of energy within school districts were rising rapidly. Tuma and Dunwoody (1977) presented a study of five north central states of the United States, including Illinois, which showed that, "Median energy dollar cost per pupil (all fuels) rose from $24.09 to $36.30 (an increase of 50.6%) in the two year period from 1972-73" (p. 1). Graves (1977) stated:

> The energy problem . . . is expected to grow in acuteness during the remainder of the 20th Century. Within only two years, school district energy costs have jumped by 48%, an increase amounting to 514 million dollars. (p. 32)

Mordue and Ward (1977) wrote, "The budgets of many U.S. school districts are in the red because of the increased cost of fuel" (p. 130). In Hillsborough County, Florida, consumption increased 20.14% from school term 1974-75 to school term 1976-77 and total energy cost, of which electrical costs were approximately 75%, rose from $2,000,000 to $3,500,000 (Hillsborough County, 1978). Lee County, Florida, school officials reported that the Lee County Public Schools' utility costs increased approximately 350% from the beginning of the 1973-74 school term to the end of the 1977-78 school term with approximately 75% of the total utility expense being allocated to electricity (Lee County, 1978).

In summary, the following statement from the Energy Policy for Florida as developed by the Florida State Energy Office (Hammond, Baird, Messenger, Hopkins, & LaHart, 1977) represented a legitimization of the use of energy conservation measures as a response to the increased consumption and cost of energy.

> WHEREAS, energy conservation represents a meaningful, immediate, and appropriate state response to the energy problem by eliminating waste and inefficiency and increasing economic productivity, by reducing the depletion of our domestic energy resources which, in turn, increases economic flexibility of the people of Florida, and by decreasing the pressure to develop marginally efficient methods of energy production and thereby reducing the flow of capital from the non-energy sections of the economy and avoiding serious impacts on our environment, NOW, THEREFORE, BE IT RESOLVED
>
> IT SHALL BE THE POLICY OF THE STATE OF FLORIDA TO:
> 1. Develop and promote the effective use of energy in the State and to discourage all forms of energy waste. (pp. 5-6)

Thus, the State of Florida was on record as identifying the conservation of energy as an acceptable means of coping with the availability of sufficient energy to fuel the state's economy and provide for the well-being of the citizens.

Energy Conservation Programs

The basic rationale that influenced the development of many of the alternatives which were considered as viable electric energy conservation measures during the 1970's has been stated as follows:

> We think that what's going to have to be done in the next three or four years is for everyone, but especially for the students who are just entering the world, to re-evaluate the whole position in this country that we're facing in regard to what we do for money and what money will buy and what money won't buy . . . what we're going to have to do is to change the patterns of consumption in this country and in the rest of the world. The same thing is true of energy . . . we're going to have to think in terms of energy units instead of in terms of money. (Hammond et al, 1977, p. 33)

Hill (1976), Ingalls (1977), Trelease (1979), and Williamson (1978) noted that choices would have to be made relative to the respective roles of the conservation of energy units and the expenditure of dollars. They recognized that available funds could be allocated for the purchase of energy conservation devices. However, they also recognized that the purchase of many of these devices would involve a long payback period and, due to the fact that time appeared to be of essence, they began to place emphasis on those alternatives which would result in the immediate conservation of electric energy units with a short payback period. The economist, Kenneth Boulding, supported the position that conservation efforts should be planned in terms of energy units rather than in terms of money when he wrote, "It is cheaper at the moment to save a bottle of oil than to buy one" (cited in Ingalls, 1977, p. 7).

The securing of a commitment from top management officials and their subordinates was viewed as a fundamental step in the development and implementation of an electric energy conservation program (Bickle & Emry, 1979; Dorgan, 1978; Ingalls, 1977; Tenneco, 1978,

p. 19). Dorgan further stated that, "For an energy management program to be successful, all members of the school--administration, teachers, students, plant staff and school board--must be involved" (p. 5). Total involvement of school related personnel was a key factor in both the Hillsborough County and Seminole County, Florida, energy conservation programs as was demonstrated by the following statement which was included in both program rationales: "If everyone in the school system is involved, to some degree, a substantial savings (in the consumption of electric energy) will occur" (Hillsborough County, 1978, p. 5; Seminole County, 1978, p. 6).

The efforts of authorities in the field of electric energy conservation to explore and develop new conservation techniques have been focused upon three major categories of savings: (a) reduction of out-and-out loss as a result of the rectification of building deficiencies through modification, alteration, or retrofitting; (b) more efficient and prudent use of energy as a result of improved plant maintenance and operational practices; and, (c) curtailment as a result of a reduction in the duration of operation or the amount of electric energy consumption (Stephan, 1977). In addition to these three categories, Freeman (1974) identified a fourth basic approach which would have a long range impact, the exploration of curriculum innovations. He noted:

> Concentrate on what you can do with your district's curriculum - not your school's thermostats. . . . We are in the deepest kind of trouble, unless the people of this country learn about energy and make it a people's issue. (p. 52)

An exploration of the literature relative to the out-and-out loss savings category revealed that there were many existing design and structural deficiencies in the schools of the 1970's which contributed to the waste of electric energy (Educational Facilities Laboratories, 1973, pp. 6-8; Neill, 1977, p. 20; Savage, 1976; Stephan, 1977). A variety of concepts were developed in an attempt to rectify the existing school building deficiencies which were impacting the consumption of electric energy. Emphasis was placed upon the waste of electric energy when utilized for the heating and cooling of air, lighting, and the operation of tools and equipment (Neill, 1977, pp. 40-41). The exploration of electric energy saving concepts ranged from the re-evaluation of landscaping (Graves, 1977) to the total re-design of a school facility to capitalize on the ways in which general design decisions could contribute to energy conservation (Page, 1974).

There were numerous expressions of opinions relative to the efficiency of artificial lighting and the use of natural lighting. Arumi (1977) held, "Careful integration of day lighting, with artificial lighting and building geometry can reduce the total (electric) energy consumption in buildings" (p. 182). Neill (1977, pp. 61-62)) and Dorsey (1979) concurred that the matching of the most efficient light source, new high efficiency reduced wattage fluorescent lamps, ballast, and fixtures could save a minimum of 15% in energy consumption with a negligible change in light levels. Meyers (1979) explored options related to the direct substitution of existing electric lighting sources, the use of improved on/off electrical switches, the use of time clocks to control outdoor lighting, the use of dimmers to provide flexibility in lighting, and the use of photocell controls to turn lights on and off. Meyers, an architect, was convinced that the options which he proposed would cut energy consumption by 50% without loss of lighting.

Retrofitting, the alteration of facilities, and the addition of equipment and materials were electric energy savings options related to heating, ventilation, and air conditioning. The following were cited as examples of the options available: the use of caulking and weather stripping to reduce both heat leaks and heat gain (Tenneco, 1978, p. 14); the installation of controls to minimize simultaneous heating and cooling, and the replacement of outdoor air dampers that leak excessively (National Association of College, 1977, p. 37); the replacement of school building windows with insulated panels and the replacement of cast iron steam radiators with an energy efficient water source heat pump system (Trelease, 1979); and the installation of different wall treatments to reduce solar heat gain (Neill, 1977, p. 62). One of the successful innovations cited was the installation of an IBM System 7, a computerized system which monitored electrically operated ventilating fans in the three high schools of the Mt. Prospect, Illinois, Public School System (Savage, 1976). Savage reported that the system cost $90,000 to install and that its use reduced the electricity bill of the Mt. Prospect district by about $135,000 the first year. Given the foregoing options, as educational facility planners made changes in heating and cooling equipment they employed one general rule which transcended all planning efforts, the specification of high energy efficiency ratings in their bid requests (Tenneco, 1978, p. 18).

Educational facilities specialists have argued that operational improvement in existing schools could increase energy efficiency and reduce the consumption of electric energy without the accomplishment of physical changes (Educational Facilities Laboratories, 1973, p. 11).

Among those techniques and procedures which have been utilized to effectuate electric energy conservation are the calibration of thermostats to ensure that they provide accurate readings, the routine cleaning of air filters and lighting fixtures, the adjustment of air dampers to more accurately control the flow of hot and cold air, the addition of insulation, the planning of custodial and maintenance schedules to minimize the utilization of electric energy, and the removal or pruning of shrubbery and other obstructions that diminish natural ventilation (Allen, 1976, pp. 18-21; Educational Facilities Laboratories, 1973, pp. 13-27; National Association of College, 1977, pp. 96-103; Neill, 1977, pp. 40-41; Tenneco, 1978, pp. 12-18).

The implementation of improved operating and maintenance procedures was not without its problems. Graves (1977) noted:

> It's a fact that school maintenance personnel are good at hands-on plant operation, but not so knowledgeable when it comes to the operational physics of getting the greatest mileage out of a building--particularly as it concerns energy conservation. (p. 33)

The establishment of training programs for operation and maintenance personnel was an important part of the innovations of the 1970's. Educational Facilities Laboratories (1973) reported, "The most immediately pressing task in a school district's energy conservation program is to assure high qualifications in O & M personnel" (p. 24).

Several options have been advanced relative to energy curtailment. Reduction in the number of hours of operation, discontinuance of extracurricular activities, reduction of certain excesses in areas such as lighting and temperature, and the reduction of ventilation cycles were options cited by Stephan (1977). Barnette (1978) proposed an energy saving school year calendar which consisted of

34 weeks and he predicted it would save from 15% to 20% in heating costs in the colder states. Dorgan (1978) promoted the extension of the winter vacation in northern schools and the daytime scheduling of sports events.

The suggestions made relative to curtailment involved a common sense approach to electric energy conservation on the part of school personnel. The turning off of lights when classrooms were not in use, the reduction of water temperature, the closing of doors and windows, the use of equipment only when needed, the curtailment of hot water heater operation on weekends and holidays, and the reduction of lighting in hallways were curtailment efforts recommended in an energy conservation handbook developed for the Orange County, Florida, Public Schools (1979) prior to the development and implementation of the program discussed herein.

One innovation which arose out of the considerations relative to the concept of curtailment of energy usage was the development of electric energy conservation monetary incentive plans. As previously defined, electric energy conservation monetary incentive plans are plans designed to promote the conservation of electric energy through the practice of returning a portion of the dollar savings related to the cost of electric energy to the school building administrator to be utilized as a supplement to the local school's operating budget. Monetary incentive programs reported in the literature are summarized in the following paragraphs.

Artus (Note 3) reported that Clark County, Nevada, public school officials had implemented a program to provide a rebate for savings in both gas and electric energy usage. The amount of savings for each school was determined by subtracting the usage in the current period from a standard year (1975) and then adjusted through the application of a formula which took into consideration square footage, temperature, and changes in the number of days in the billing cycle. The savings factor was then multiplied by the current cost per unit of energy consumed to determine the dollar amount of the rebate.

Hillsborough County, Florida, public school officials (1978) reported the implementation of an electric energy usage conservation program which had the following components: (a) the maintenance of records by the business department to determine the percentage of increase or decrease in electric energy usage; (b) the development of a monetary reward schedule which provided for monthly rewards which ranged from $30 per month per school to $125 per month per school plus 10% of the money saved; and, (c) the allocation of an additional $25 per month to the 10 schools with the best monthly kilowatt usage decrease. The rewards were sent to each school on a monthly basis to be distributed as follows: 40% to the school's general miscellaneous account, 20% to student body oriented projects, and 40% to an energy conservation trust account for expenditures related to professional activities.

An energy conservation cost-avoidance program was instituted by personnel of the Houston, Texas, Independent School District (Ingalls, 1977). The implementation of the Houston plan involved the comparison of a school's current energy usage to its usage for the three prior years. If the school used less energy over a given 4-month period, 25% of the cost-avoidance was returned to the building principal to use for capital expenditure projects. The Houston Independent School District had six area superintendents who had administrative responsibility for 40 schools each. The Houston plan included a component in which the energy usage factors for all of the schools within an area superintendent's jurisdiction were added together and if an area had a net decrease in energy consumption, 25% of that cost-avoidance was returned to the area superintendent for capital expenditure projects within the area.

Lee County, Florida, school officials implemented an energy conservation program which was based upon the accomplishment of gross savings in the electric energy utility accounts (Lee County, 1978). The Lee County plan provided for the return of 50% of the money saved by a school or center to that school or center for the purchase of equipment and supplies. Twenty-five percent of the amount saved was allocated to the district's maintenance department for utility conservation equipment and the remaining 25% was a direct savings which was reflected in the district's general revenue fund balances. At the time the components of the Lee County plan were reported, no variables which would influence a school or center's utility performance were applied to the allocation formulas. The fact that a number of existing variables existed was recognized as the director of maintenance noted, "As our data base expands, we will attempt to develop some form of district-wide standard against which each school or center can measure itself" (p. 6).

The school board of Palm Beach County, Florida, adopted a utility management program which provided that, "A portion of the money saved as a result of the Utility Management Program should be put back into the schools and centers for equipment and supplies" (Palm Beach County, 1977). The program as implemented provided that 25% of the money saved by a school or center be returned to that school or center for the purchase of equipment and supplies. A matching amount was allocated to the district's maintenance department for the purchase of utility conservation equipment with the remainder allocated to the district's general fund.

As an incentive to conserve electric energy the school board of Seminole County, Florida, offered each school in the district a monetary reward (Seminole County, 1978). The Seminole County program provided for an escalated scale of monthly monetary rewards. The monthly monetary reward given to a school decreasing its electric energy use by 1% to 5% was $25 per month plus 10% of the money saved and for a school which decreased its electric energy consumption by 26% or greater the monthly reward was $100 per month plus 10% of the money saved. The Seminole County board allocated an additional $25 per month to each of the five schools with the best monthly dollar decrease over the previous year. The Seminole County program did take into consideration the total square footage of the facility. This factor was added to the Seminole County program due to the fact that there was a large inventory of portable classrooms in the district and it was recognized that portable classroom gains or losses would directly affect the total square footage of the individual school facility.

Hill (1976) reported the implementation of an energy conservation rebate program in the Rochester, New York, public school system. The Rochester plan involved

> the maintenance of complete energy-use records for each school center including actual fuel quantities used, kilowatt-hours of electric energy consumed, fuel units per degree day, Btu consumption per degree day per square foot, and kilowatt-hours per square foot. Comparisons were made--month-to-month for each school, school-to-school on a per square foot basis, and year-to-year on a per degree day basis. The last comparison, total year's fuel consumption per total degrees day and total electrical energy use--present year compared to a base year, allowed an increase or decrease percentage value to be assigned to each school. (p. 1)

Rochester school business officials calculated the monetary reward by applying the percentage of decrease against the dollar amount allocated for each school's current year budget. Fifty percent of the amount derived from this calculation was returned to the school as a direct rebate. One unique feature of the Rochester plan was that if a school earned a certain level of additional dollars through its conservation efforts compared to the base year, it continued to receive that amount of money as long as its conservation efforts continued to produce the same savings.

Results of Electric Energy Monetary Incentive Programs

In June, 1979, the School Board Internal Auditing Department of the Hillsborough County, Florida, Public School System prepared an analysis of that school system's energy conservation incentive reward program (Note 4). One portion of the analysis contained a review of the use of kilowatt hours of electricity for Fiscal Year 1978-79 as compared to Fiscal Year 1977-78. The report showed that there had been a significant reduction in usage during FY 1978-79 as compared to FY 1977-78. Specifically, there was a reduction from 92,441,237 kilowatt hours to 85,214,320 kilowatt hours. The reduction represented a decrease in the use of electricity of 10,412,426 kilowatt hours or a 10.88% decrease. Decreased kilowatt hour usage was experienced at 122 of the Hillsborough County Public School's work locations, no change occurred at 2 locations, and increased usage occurred at 26 locations. One school center experienced a 73.47% decrease and the greatest increase was 9.37%. It was estimated that the Hillsborough County Public School System realized a savings of $644,283.44 for FY 1978-79 as a result of the decreased use of electricity.

In regard to the implementation of the Hillsborough County energy conservation incentive reward system, it was reported that the incentives allocated for FY 1978-79 totaled $180,584.93. This total was comprised of $101,310 in base rewards and $79,274.93 in rewards allocated through application of the 10% factor. The incentive rewards were funded from the total savings of $644,283.40 and, after they were deducted from the gross total, the net impact upon the amount budgeted in the Hillsborough County account for electricity was a net savings of $463,698.47 or 71.90% of the gross total saved.

Personnel of the Contract Services and Energy Conservation Department of the Houston Independent School District prepared an energy use analysis for the 1977-78 school term (Note 5) as an assessment of the Houston School District's Energy Conservation Program. One component of the Houston program was a cost-avoidance incentive payment for which each school center was eligible. The analysis of results as presented for the 1977-78 school term revealed that

> 156 schools showed a cost-avoidance (the amount of money that would have been spent if gas and electricity had been used in FY 1977-78 the same as used during the time period from September, 1974 through August, 1977, the Houston base) amounting to $433,733.22, there were 64 schools that wasted $186,517 giving a net cost-avoidance of $247,216.22 for the 220 schools in the

> District. . . . The goal for the District was a 15% cost-avoidance or $1,079,751.51. A 15% cost-avoidance is realistic and obtainable as has been proven by many schools. National studies have shown that a 30% to 35% reduction is possible. (p.2)

The incentive payments goal for the Houston District for FY 1977-78 was $539,876. The actual amount of incentive payments allocated for FY 1977-78 totaled $170,237 of which $108,433.31 was paid to the schools and $61,804.06 was paid to area offices. The largest incentive paid to an individual school was $4,060.

An analysis of the data indicated that the energy conservation efforts of the Houston Independent School District were not resulting in a sufficient degree of conservation to permit the established goal of a 15% cost-avoidance to be met. This did not impede efforts to continue the promotion of the total program, especially the incentive program, as was indicated by the Executive Director, Contract Services and Energy Conservation, Houston Independent School District who wrote:

> We plan to continue this program. The General Superintendent is asking that 30% of the cost-avoidance for 1978-79 be returned to the principal. The Area Superintendents will receive 30% of the cost-avoidance. The balance of the cost-avoidance will be retained in the general fund.
>
> We anticipate some improvement in the school year 1978-79 over that which is shown in the report. The main reason we don't anticipate too great an increase is primarily due to the report being submitted in May which was after most of the school year was completed. This report gained considerable attention throughout the schools and during the summer a very decided change in energy usage was noted. We are looking for a very large reduction in energy consumption during the school year 1979-80, primarily due to the increased emphasis on energy conservation which was generated by this report. (Ingalls, Note 6, p. 1)

The status of the energy rebate program of the City School District of Rochester, New York, for the 1978-79 school term was presented in a memorandum distributed to all principals (Reason, Note 7). A review of the memorandum revealed that the total rebate to Rochester's schools for the 1978-79 school term amounted to $118,094 which was an increase of $7,471 over the 1977-78 school term and a tripling of the amount of the rebates made during the initial year of the program (1975). The rebates for the 1978-79 school term were allocated to 41 of the 67 schools (31 elementary schools and 10 secondary schools). Reason commented:

> Once again schools that have concentrated on their energy conservation program are realizing very substantial amounts of additional money to be used for their school programs. It is interesting to note that we have a rather substantial movement into the higher earnings (with East High School earning $21,901 in rebates). However, proportionally there are equally substantial rebates at the elementary level with No. 12 School earning $7,906 and No. 22 School earning $5,224. Overall, for 1978-79 24 schools have earned over $1,500, 11 schools have earned over $3,000 and 7 schools have earned over $5,000. (p.1)

In September, 1978, the Palm Beach County, Florida, School Board issued a report relative to the status of the District's utility program after the first 31 months of operation (Ripley, Note 8). It was reported that the Palm Beach County Public Schools had experienced a combined savings of $994,268 for fiscal years 1977, 1978, and 1979, and a reported cost-avoidance for the same time period of $2,068,072. During the 31 month period $200,000 was reported as having been returned to the schools in monetary reward payments.

The status of the Clark County, Nevada, Public School District's program as of October, 1979, was set forth by Artus (Note 3) who stated:

> Our program lasted 18 months with rebates ranging from $2.19 to $5.50 per student per year. It appeared that the success of each school was primarily dependent on the efforts of the principal and custodians as opposed to the building configuration . . . after 18 months, all schools were involved in a voluntary conservation program without rebates. (p.1)

The results of the first year of implementation of the Lee County, Florida, School Board's energy conservation program showed that $160,500 was saved during the 1977-78 school term. The Lee County program included an incentive component and 24 of the district's 44 schools received monetary incentives. The total amount of incentives allocated was $59,724 with the greatest allocation being $5,000 and the least $39 (Lee County, 1978).

The scope of the review of empirical investigations of energy conservation monetary incentive programs with electric energy components was limited by the lack of published data. The information contained in the reports and analyses reviewed did appear to indicate that incentive programs offered the manager of individual school facilities an opportunity to gain substantial additional dollars for the school's budget. Further, the evidence cited showed that not all managers of school facilities in the districts which were reported as having incentive programs were able to capitalize on the opportunity to earn a monetary incentive reward. None of the reports and analyses reviewed contained an attempt by school officials to present evidence which would have provided an assessment of the degree of impact which the incentive reward program had upon the school district's total energy conservation effort.

CHAPTER III

THE MODEL ELECTRIC ENERGY CONSERVATION MONETARY INCENTIVE PROGRAM

The purpose of the chapter is to present a description of the model Electric Energy Conservation Monetary Incentive Program (ECMIP) which was developed for the Orange County, Florida, Public School System. A planning task force (PTF) which worked with the endorsement of the district superintendent and the school board was responsible for the developmental tasks. In the sections that follow descriptions of the components of the incentive program, the incentive award formula, and illustrative applications of the formula and other components are presented.

Overview

The model ECMIP which is described herein was designed to be an integral component of the Orange County, Florida, Public School System's Energy Management/Conservation Program. At the time that the ECMIP was adopted by the school board, previous board actions had been taken which had authorized the implementation of the following:

1. The establishment of an energy management section which had been staffed within the organizational structure of the school system's maintenance unit.

2. The development of an energy management computer program, which provided the capability to "track" the cost and consumption of electric energy.
3. The development and publishing of an energy conservation handbook.
4. The inclusion of funding in the 1979-80 operating budget of the school system for the purchase of energy conservation devices.
5. The implementation of mandates of state and federal governmental regulations relative to electric energy conservation.

The foregoing, and the development and initiation of the ECMIP comprised the formal Electric Energy Conservation/Management Program as the Orange County School System entered the 1980's.

The PTF, which was described in Chapter I, was responsible for the development of the model monetary incentive program. A primary concern of the PTF was to insure that the model contained a balance between the number of selected variables which affect the consumption of electric energy at an educational plant, and simplicity in the formula utilized to compute the monetary incentive awards. The PTF recognized that the method by which incentive awards could be computed could vary from a simple dollar computation per time unit to complex calculations which could take into account such factors as degree days and fuel adjustment variations. Upon the completion of the identification and assessment of the most commonly cited components from ECMIP's reviewed by the PTF, it was determined that the Orange County ECMIP would include a minimum number of components: KWH utilization, changes in square footage, changes in hours of operation, changes in student population, changes in facility design or major electrical equipment, and the average rate or cost of electric energy per KWH.

Description of the Incentive Award Formula

The PTF established the following formula to be utilized in the calculation of the total incentive award generated at an individual school: Total incentive award equals (A minus B) (C) (D) (E) (F) (Rate). The factors in the formula were described as follows:

1. KWH factor (A minus B). The difference in KWH between the electric energy utilized for a base year (A) and a current year (B).
2. Student population adjustment factor (C). The factor which results when the average student population (the average of the enrollments at an educational facility as of October 31 and January 31) for a current year (CY) is divided by the average student population for a base year (BY). The average student population would be calculated by the Administrator-Pupil Placement of the Orange County School System.
3. Square footage adjustment factor (D). The factor which results when the number of gross square feet in the buildings of an educational facility for a current year (CY) is divided by the number of gross square feet for a base year (BY). Examples of the kinds of changes which would impact this factor would include the removal or addition of a relocatable classroom, the construction of a permanent addition to an educational plant, or the renovation of a non-student occupied space into a student occupied space.

4. Hours of operation adjustment factor (E). The factor which results when the number of hours during which an educational facility is in operation as a student occupied facility for a current year (CY) is divided by the number of hours of operation of a base year (BY). An example of the kind of change which would impact this factor would be a change in hours of operation resulting from an educational program change such as the initiation or deletion of an evening class.
5. Changes in facility design and major electrical equipment adjustment factor (F). A factor which would be assigned to a change in facility design and/or major electrical equipment which impacts the consumption of electric energy. The change factors would be determined by the Director of Maintenance and the Supervisor of Electric Energy Utilization, Orange County Public School System. Unless these two parties concurred that the change would be of sufficient significance to impact the total electric energy utilization at an educational plant where the change is made, the factor would remain at 1.00.
6. Rate. The cost of electric energy per KWH. This factor would fluctuate from time to time thus, the PTF determined that the rate would be established as the average cost per KWH for the time period being considered as the current year. The average cost would be calculated by the Supervisor of Electric Energy Utilization, Orange County Public School System.

The PTF determined that the total incentive award generated at each educational facility would be allocated as follows:

1. Fifty percent of the total dollar amount of the incentive award would be added as a supplement to the individual school's operating budget.
2. Twenty percent of the total dollar amount of the incentive award would be added as a supplement to the energy management section's operating budget.
3. Thirty percent of the total dollar amount of the incentive award would be retained as a direct savings in the utility account of the district's operating budget.

The calculations which follow, using a senior high school, represent an illustrative application of the manner in which an individual school's incentive award would be determined. Each factor of the incentive award formula which was previously described is represented in the illustration.

(A) KWH Base Year (BY/1977-78) = 1,387,188

(B) KWH Current Year (CY/1979-80) = 1,214,012

A minus B = 173,176

(C) $\frac{\text{1,883 Students CY}}{\text{2,115 Students BY}} = 0.89$

(D) $\frac{\text{205,320 square feet CY}}{\text{204,241 square feet BY}} = 1.01$

(E) $\frac{\text{56 hours of operation CY}}{\text{53 hours of operation BY}} = 1.06$

(F) No change = 1.00

Rate = $0.045 per KWH

173,176 X .89 X 1.01 X 1.06 X 1.00 X .045 = $7,425.36 (total incentive award generated)

$7,425.36 X 50% = $3,712.68 (incentive award to the senior high school)

$7,425.36 X 20% = $1,285.07 (incentive award to the energy management section)

$7,425.36 X 30% = $2,227.61 (incentive award to the utilities account of the district)

Other Components of the Program

In addition to the formula component described in the preceding section, the PTF developed two additional components, one related to the expenditure of incentive award funds by the individual schools, and the other relative to a special incentive award. It was determined that the funds received by each individual school would be added directly as a supplement to the school's operating budget. All funds, so allocated, would be earmarked for expenditure upon projects which would be of direct benefit to the students. Each principal would be required to establish a committee comprised of local school management personnel, teachers, support personnel, and students. The committee would be charged with the responsibility for the development of a plan for the expenditure of incentive award funds. A listing of the areas which would qualify as being of direct benefit to the students would be presented to the committee. Two major categories, instruction and support, were established. Within the category of instruction the following items were listed: media center audio/visual materials, classroom audio/visual materials, library books, magazine and periodical subscriptions, supplemental classroom instructional materials, supplemental classroom instructional equipment, physical education equipment, music and musical instruments, art materials, and athletic equipment. The category which related to support contained the following items: construction of student-related facility additions, renovation or remodeling of student related facilities, improvement of outdoor physical education areas, improvement of outdoor athletic areas, and purchase of student furniture.

Upon completion of the development of a plan for the expenditure of incentive award funds, each principal would be responsible for reporting the manner in which the monetary incentive awards would be expended. The report would be submitted to the energy utilization supervisor who would maintain a master file of the reports which would provide information relative to the major categories and items upon which electric energy incentive funds had been expended.

The PTF developed a component which provided for the granting of a special incentive award to the schools in which the greatest amount of energy was saved. The special award would be made on June 30 of each year and would be based upon the total electric energy savings (measured in KWH) for the time period established as the current year as compared to the same time period of the base year. It was determined that there would be three categories of awards: adult vocational/technical-senior high schools, junior high schools, and elementary schools-special education centers. Further, it was concluded that one school category would not be compared with another. Senior high schools and adult vocational/technical centers would be compared with senior high schools and adult vocational/ technical centers, junior high schools would be compared with junior high schools, and elementary schools and special education centers would be compared with elementary schools and special education centers.

The following special incentive awards schedule was included in the model program:

School Level	Amount
Adult vocational technical-senior high	$400.00
Junior high-level 1 (most signficant reduction)	$400.00
Junior high-level 2 (second most significant reduction)	$200.00
Elementary-special education-level 1 (most significant reduction)	$400.00
Elementary-special education-level 2 (second most significant reduction)	$200.00
Elementary-special education-level 3 (third most significant reduction)	$100.00
Elementary-special education-level 4 (fourth most significant reduction)	$ 50.00

The PTF elected to include a varying number of levels in the special awards schedule. This decision was based upon the fact that the number of school facilities within categories varied. There were 13 schools in the adult vocational/technical center-senior high school category, 19 schools in the junior high school category, and 66 schools in the elementary school-special education center category.

Implementation Schedule

The model program was implemented on September 1, 1979. It was in effect through May 31, 1980, and the impact data reported in Chapter IV cover the first nine months of the operation of the program.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA RELATIVE TO THE IMPLEMENTATION OF THE ENERGY CONSERVATION MONETARY INCENTIVE PROGRAM

A major focus of the study was to determine the impact that the electric energy conservation monetary incentive program (ECMIP) had upon the gross amount of dollars expended for electric energy and the gross consumption of electric energy in the Orange County, Florida, Public School System. To determine the impact of the ECMIP, information relative to the dollar costs and rates of consumption of electric energy for nine months of the base year (FY 1977-78) was compared to information which was compiled for a similar time period of the current year (FY 1979-80). Also, for the dollar costs it was necessary to account for the cost of funding the monetary incentive program. The primary purpose, herein, is to present the results of the analysis.

Data relative to the use of electric energy in the Orange County Public School System are presented in both monetary units (dollar costs) and rates of consumption (kilowatt hours), and are presented on both a monthly and total time period basis. The data, both narrative and tabular, for the 98 school centers are presented in the following manner: (a) each elementary school individually and all elementary schools collectively, (b) each special education center individually and all special education centers collectively, (c) each junior high school individually and all junior high schools collectively, (d) each senior high school individually and all senior high schools collectively, (e) each adult vocational-technical school individually and all adult vocational-technical schools collectively, and (f) all schools collectively.

Another focus was to determine the manner in which the monetary incentive award funds received at the local school level (50% of the total amount generated) were allocated by local school personnel to selected categories of expenditures. The data relative to the manner in which the monetary incentive funds received by the local schools were allocated for expenditure by category and item are reported as a percentage of the total incentive award received by each school which was, as noted in Chapter III, 50% of the total amount generated. The same classification of school centers is used to report this information as is utilized in reporting the use of electric energy.

Comparisons of Total School Dollar Costs for Electric Energy

The total school dollar costs for electric energy from 9/1/77 through 5/31/78 were compared with the dollar costs from 9/1/79 through 5/31/80. The results of the comparisons are presented for each of the 98 school centers and previously defined categories of schools in Tables 1-6.

Elementary School Total Dollar Costs

Presented in Table 1 are the comparisons relative to the dollar costs for the 63 elementary schools which were included in the study. Of the 63 schools, 45 (71.4%) had a savings when the costs for 1977-78 were compared with those of 1979-80. The median expenditure for

Table 1

Individual Elementary School Dollar Costs for Electric Energy for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Aloma	$ 16,862	$ 17,177	$ 315
Apopka	17,014	20,868	3,854
Audubon Park	17,410	14,557	(2,853)
Azalea Park	12,712	10,460	(2,252)
Blankner	10,061	9,610	(451)
Bonneville	13,174	12,777	(397)
Brookshire	12,878	11,616	(1,262)
Catalina	12,409	10,020	(2,389)
Cheney	12,580	11,741	(839)
Chickasaw	14,714	14,207	(507)
Columbia	20,195	19,294	(901)
Conway	12,640	11,885	(755)
Cypress Park	4,870	5,728	858
Dillard Street	23,391	22,143	(1,248)
Dommerich	19,909	20,215	306
Dover Shores	11,924	11,051	(873)
Dream Lake	11,772	10,919	(853)
Durrance	11,847	10,754	(1,093)
Eccleston	16,435	14,099	(2,336)
Engelwood	11,658	10,303	(1,355)
Fern Creek	14,318	11,646	(2,672)
Grand Avenue	7,280	8,830	1,550
Hiawassee	14,261	13,205	(1,056)
Hillcrest	8,266	6,655	(1,611)
Ivey Lane	13,655	14,013	358
Kaley	8,130	6,794	(1,336)
Killarney	10,237	11,559	1,322
Lake Como	11,673	9,724	(1,949)
Lake Silver	8,718	9,314	596
Lake Sybelia	19,649	22,147	2,498
Lake Weston	15,035	11,297	(3,738)
Lakemont	13,388	13,023	(365)
Lancaster	15,776	16,318	542
Lockhart	7,929	7,862	(67)
Lovell	16,340	15,250	(1,090)
Maxey	15,857	15,472	(385)
McCoy	23,168	15,681	(7,487)
Oak Hill	36,826	35,165	(1,661)
Orange Center	14,891	14,998	107
Orlo Vista	13,350	12,829	(521)
Palmetto	31,875	26,901	(4,974)
Pershing	14,338	15,580	1,242
Pinar	38,117	45,225	7,108

Table 1
(continued)

School	1977-78	1979-80	Difference[a]
Pine Hills	$ 7,420	$ 6,676	$(744)
Pineloch	11,472	10,117	(1,355)
Princeton	8,631	8,697	66
Mollie Ray	11,458	9,829	(1,629)
Richmond Heights	13,033	11,953	(1,080)
Ridgewood Park	17,564	14,824	(2,740)
Riverside	16,359	15,496	(863)
Rock Lake	12,565	10,774	(1,791)
Rolling Hills	15,643	14,856	(787)
Sadler	17,784	17,599	(185)
Shenandoah	16,823	17,397	574
Spring Lake	15,547	13,643	(1,904)
Tangelo Park	16,194	15,003	(1,191)
Tildenville	10,316	11,003	687
Union Park	17,374	15,191	(2,183)
Washington Shores	13,689	11,059	(2,630)
Wheatley	21,821	22,753	932
Windermere	16,543	17,281	738
Winegard	37,506	37,498	(8)
Zellwood	13,814	11,838	(1,976)
TOTAL	$969,088	$922,399	$(46,689)

[a] Numbers in parentheses indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

1977-78 was $13,814 while the median for 1979-80 was $13,023. The amount saved ranged from a high of $7,487 at McCoy Elementary School to a low of $8 at Winegard Elementary School. The median savings was $1,248. Eleven schools (24.4%) of the 45 saved more than $2,000, 17 schools (37.8%) saved between $1,000 and $2,000, 10 schools (22.2%) saved between $500 and $1,000, and 7 schools (15.6%) saved less than $500.

Increases in costs occurred at 18 of the 63 elementary schools (28.6%). The increases ranged from a low of $66 at Princeton Elementary School to a high of $7,108 at Pinar Elementary School. The median increase was $712.50. Five schools (27.7%) of the 18 had an increase of less than $500, 7 schools (38.9%) had an increase of between $500 and $1,000, 3 schools (16.7%) had an increase of between $1,000 and $2,000, and 3 schools (16.7%) had an increase of more than $2,000.

For the total of 63 elementary schools, 28 (44.4%) experienced a savings of more than $1,000, while 6 (9.5%) had increased costs of more than $1,000. The reduction of the total dollar costs from $969,088 in 1977-78 to $922,399 in 1979-80 equaled $46,689, a 4.8% decrease.

Special Education Center Total Dollar Costs

The dollar costs for the three special education centers are presented in Table 2. Two of the centers had a savings between 1977-78 and 1979-80 while one experienced an increase. The Magnolia Center had a savings of $7,285, and the Gateway Center a savings of $4,011, as compared to the Forrest Park Center's increase of $30. Total expenditures for the three centers decreased from $50,907 in 1977-78 to $39,641 in 1979-80, an amount of $11,266 which represented a 22% decrease.

Table 2

Individual Special Education Center
Dollar Costs for Electric Energy
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Forrest Park	$ 7,892	$ 7,922	$ 30
Gateway	14,781	10,770	(4,011)
Magnolia	28,234	20,949	(7,285)
TOTAL	$50,907	$39,641	$(11,266)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Junior High School Total Dollar Costs

As shown in Table 3 there were 19 junior high schools included in the investigation. Of the 19 schools, 12 (63%) experienced a savings when the costs for 1977-78 were compared to those of 1979-80. The median expenditure for 1977-78 was $26,295 which was decreased to a median of $24,618 for 1979-80. The greatest amount saved among the 12 schools was $25,647 at Westridge Junior High School, an amount which exceeded the next highest savings by $16,650. The least amount saved was $16 at Lakeview Junior High School. Six (50%) of the schools at which a savings took place had a savings in excess of $5,000, 4 schools (33.3%) saved between $900 and $2,600, while 2 of the 12 schools (16.7%) saved less than $100. The median savings was at $4,296.50.

There were seven of the 19 schools (37%) which had an increase in expenditures. These increases ranged from a low of $479 at Maitland Junior High School to a high of $6,170 at Union Park Junior High School. The median increase was $1,758. Four of the seven schools (57%) had an increase in excess of $15,000, and three (43%) experienced an increase of less than $1,000.

Of the 19 junior high schools 6 (31.5%) had a savings in excess of $6,000, and 1 (5%) had an increase in excess of that amount. The total dollar cost for all junior high schools was reduced from $610,370 in 1977-78 to $560,561 in 1979-80, a reduction of $49,809 (8.2%).

Table 3

Individual Junior High School
Dollar Costs for Electric Energy
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Apopka	$ 35,490	$ 35,444	$(46)
Carver	26,295	25,285	(1,010)
Conway	42,311	36,088	(6,223)
Glenridge	19,560	20,326	766
Howard	14,743	13,300	(1,443)
Jackson	21,254	18,728	(2,526)
Lakeview	19,510	19,494	(16)
Lee	20,769	19,840	(929)
Liberty	68,432	62,050	(6,382)
Lockhart	20,584	23,786	3,202
Maitland	18,408	18,887	479
Meadowbrook	55,834	46,747	(9,087)
Memorial	17,350	18,328	978
Ocoee	27,470	21,327	(6,143)
Robinswood	34,869	36,627	1,758
Union Park	36,152	42,322	6,170
Walker	50,574	44,507	(6,067)
Westridge	58,504	32,857	(25,647)
Winter Park	22,261	24,618	2,357
TOTAL	$610,370	$560,561	$(49,809)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Senior High School Total Dollar Costs

The investigation included the collection of information relative to nine senior high schools. As is shown in Table 4, there was a decrease between 1977-78 and 1979-80 in total dollar costs at all nine schools. In 1977-78 the median dollar cost was $82,378, while in 1979-80 it was reduced to $74,866. The dollar amounts saved ranged from $25,330 at Oak Ridge High School to $1,894 at Colonial High School. The median savings was $7,512. Of the nine schools, two (22.2%) saved over $20,000, two (22.2%) saved between $10,000 and $15,000, three (33.4%) saved between $5,000 and $8,000, and two

(22.2%) saved less than $5,000. The total expenditures for the nine schools were reduced from $704,401 in 1977-78 to $605,937 in 1979-80, a decrease of $98,464 (14.0%).

Table 4

Individual Senior High School
Dollar Costs for Electric Energy
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Apopka	$ 99,181	$ 85,469	$(13,712)
Boone	49,573	43,265	(6,308)
Colonial	57,683	55,789	(1,894)
Edgewater	37,772	34,518	(3,254)
Evans	82,378	74,866	(7,512)
Jones	30,477	24,963	(5,514)
Oak Ridge	103,068	77,738	(25,330)
West Orange	113,324	90,134	(23,190)
Winter Park	130,945	119,195	(11,750)
TOTAL	$704,401	$605,937	$(98,464)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Adult Vocational-Technical School Total Dollar Costs

Orange County had four adult vocational-technical schools which were included in the study. As can be determined from Table 5 none of the schools experienced a decrease when the costs for 1977-78 were compared with 1979-80. Each school had an increase, and the increases ranged from a low of $411 at Webster Adult School to a high of $2,811 at McCoy Adult School. Both McCoy and Westside Adult schools had increases in excess of $2,000, while Webster and Orange County Adult schools had increases which were less than $1,000. Total costs for 1977-78 were $71,819 which increased to $77,919 in 1979-80, an increase of $6,100 (8.5%).

Table 5

Individual Adult Vocational-Technical School
Dollar Costs for Electric Energy
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
McCoy	$11,944	$14,755	$2,811
Orange County	11,999	12,623	624
Webster	22,221	22,632	411
Westside	25,655	27,909	2,254
TOTAL	$71,819	$77,919	$6,100

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Total Dollar Costs for Categories of Schools and All Schools Combined

Presented in Table 6 are the comparisons relative to the total dollar costs for electric energy for the five categories and all schools combined. The totals from Tables 1-5 have been placed in Table 6 so that it can be seen readily that there was an overall decrease in expenditures between 1977-78 and 1979-80. A review of Tables 1-5 will reveal that 68 (69.4%) of the total of 98 schools involved in the study were responsible for bringing about that decrease. The average expenditure for the 63 elementary schools decreased from $15,382.35 to $14,641.25 (4.8%), for the three special education centers from $16,969 to $13,213.67 (22.1%), for the 19 junior high schools from $32,124.74 to $29,503.21 (8.2%), for the nine senior high schools from $78,266.78 to $67,326.33 (14%), while the average expenditure for the four adult vocational-technical centers increased from $17,954.75 to $19,479.75 (8.5%). The total expenditure for 1977-78 was $2,406,585 as compared to $2,206,457 for 1979-80. The cost difference between these two time periods was a decrease of $200,128 for an overall decrease of 8.3% in dollar costs.

Table 6

Dollar Costs for Electric Energy for Categories of Schools and for All Schools Combined for 1977-78 and 1979-80

School Category	1977-78	1979-80	Difference[a]
Elementary Schools	$969,088	$922,399	$(46,689)
Special Education Centers	50,907	39,641	(11,266)
Junior High Schools	610,370	560,561	(49,809)
Senior High Schools	704,401	605,937	(98,464)
Adult Vocational-Technical Centers	71,819	77,919	6,100
All Schools Combined	$2,406,585	$2,206,457	$(200,128)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Comparisons of Monthly School Dollar Costs for Electric Energy

The monthly school dollar costs for electric energy from 9/1/77 through 5/31/78 were compared with the monthly dollar costs from 9/1/79 through 5/31/80. The results of the monthly comparisons are presented for each of the five classifications of school centers as Tables 7-11 and for all schools combined as Table 12. Information relative to the monthly dollar costs for each individual school center is contained in Appendices A-E.

Elementary School Monthly Dollar Costs

The monthly dollar costs for each of the nine months studied are presented for all elementary schools combined in Table 7. The information which enabled the combined monthly dollar costs to be calculated is presented by individual school in Appendix A. Examining Table 7 one can observe that the costs for September were the highest monthly costs for both years, and the costs for May were the second highest. These two months represent the first and last months of the study. The monthly costs for 1977-78 ranged from a low of $84,806 in December to a high of $146,808 in September. The median cost for 1977-78 was $100,961, the February cost. The monthly costs for 1979-80 ranged from $77,266 in December to $140,330 in September, and the median monthly cost was $94,258, the April cost.

Table 7

Monthly Dollar Costs for Electric Energy
for All Elementary Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$146,808	$140,330	$(6,478)
October	103,837	124,416	20,579
November	92,310	93,423	1,113
December	84,806	77,266	(7,540)
January	94,049	80,595	(13,454)
February	100,961	87,639	(13,322)
March	94,085	94,865	780
April	110,342	94,258	(16,084)
May	141,890	129,607	(12,283)
TOTAL	$969,088	$922,399	$(46,689)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

One can also observe that there was a savings in dollar costs between 1977-78 and 1979-80 for the elementary school category during six of the nine months studied. The decreases ranged from a high of $16,084, a decrease of 14.6% in April, to a low of $6,478, a decrease of 4.49% in September. The median decrease was $12,802.50. Four of the six months (April, January, February, and May) showed a decrease in excess of $12,000, and the other two months (September and December) had decreases of $6,478 and $7,540 respectively.

There were three months (October, November, and March) for which an increase was shown. The increases ranged from a low of

$780 in March to a high of $20,579 in October. The October increase amounted to a 19.8% increase while the March increase amounted to .83%.

Special Education Center Monthly Dollar Costs

The special education center's combined monthly dollar costs are shown in Table 8. The combined totals were calculated from the information contained in Appendix B. A review of Table 8 will reveal that the costs for September were ranked fifth for both years, and the costs for December and January were ranked eighth and ninth respectively for both years. The monthly costs for 1977-78 ranged from a low of $3,939 in January to a high of $7,250 in March. The median cost for 1977-78 was the September cost of $5,990. In 1979-80 the monthly costs ranged from a low of $3,444 in January to a high of $5,831 in October. September's cost of $4,210 was the 1979-80 median cost.

Table 8

Monthly Dollar Costs for Electric Energy
for All Special Education Centers Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$ 5,990	$ 4,210	$(1,780)
October	5,280	5,831	551
November	4,880	4,541	(339)
December	4,535	3,541	(994)
January	3,939	3,444	(495)
February	6,157	4,185	(1,972)
March	7,250	4,193	(3,057)
April	6,681	4,468	(2,213)
May	6,195	5,228	(967)
TOTAL	$50,907	$39,641	$(11,266)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

For the special education center category there was a decrease between 1977-78 and 1979-80 for eight of the nine months studied. The decreases ranged from $3,057 (42.2%) in March to $339 (6.9%) in November. The median decrease was $1,387. Four of the eight months (March, April, February, and September) showed a decrease in excess of $1,700, two months (May and December) showed a decrease between $900 and $1,000, and the other two months (January and November) showed a decrease of less than $500.

An increase was shown for one month, October. The increase amounted to $551 which represented a 9.1% increase over the costs for 1977-78. As was noted earlier, the cost for October was the highest monthly cost for 1979-80.

Junior High School Monthly Dollar Costs

Shown as Table 9 are the combined monthly dollar costs for all junior high schools. Appendix C contains the individual school information from which the combined dollar costs were developed. An examination of Table 9 will show that in both 1977-78 and 1979-80 September had the highest monthly costs, April was ranked fourth, November sixth, and December ninth. The 1977-78 monthly costs ranged from a low of $55,513 in December to a high of $87,459 in September, with February's cost of $63,746 being the median. In 1979-80, the monthly dollar costs ranged from a low cost of $44,601 in December to a high cost of $85,555 in September. The March cost of $60,415 was the median for 1979-80.

There was a decrease between 1977-78 and 1979-80 for seven of the nine months in the junior high school category. The greatest decrease was during the month of January which showed a decrease of $12,966 (21.3%). The smallest decrease came in September in the amount of $1,904 (2.2%). The median decrease was the December decrease of $10,912. Of the months in which decreases occurred four of the seven (January, February, May, and December) had decreases in excess of $10,000. Of the remaining three months, April had a decrease of $6,585, November a decrease of $3,054, and September a decrease of $1,904. The calculation of the difference between 1977-78 and 1979-80 monthly costs showed that two months (October and March) had an increase. The October increase was $5,779 (8.2%) and the March increase was $2,724 (4.7%).

Table 9

Monthly Dollar Costs for Electric Energy
for All Junior High School Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$ 87,459	$ 85,555	$(1,904)
October	70,084	75,863	5,779
November	61,393	58,339	(3,054)
December	55,513	44,601	(10,912)
January	60,799	47,833	(12,966)
February	63,746	52,274	(11,472)
March	57,691	60,415	2,724
April	67,338	60,753	(6,586)
May	86,347	74,928	(11,419)
TOTAL	$610,370	$560,561	$(49,809)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Senior High School Monthly Dollar Costs

Contained in Table 10 are the combined monthly dollar costs for all senior high schools. The information from which the combined costs were calculated is found in Appendix D. As can be seen from a review of Table 10, September had the highest monthly costs for both 1977-78 and 1979-80. Monthly costs for 1977-78 ranged from $64,975 in December to $100,614 in September, with February's cost of $77,219 being the median. The monthly costs for 1979-80 ranged from January's low of $48,118 to September's high of $102,376, with December's cost of $58,454 being the median.

Table 10

Monthly Dollar Costs for Electric Energy
for All Senior High Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$100,614	$102,376	$ 1,762
October	79,845	93,746	13,901
November	76,625	64,795	(11,830)
December	64,975	58,454	(6,521)
January	70,861	48,118	(22,743)
February	77,219	57,221	(19,998)
March	69,817	57,918	(11,899)
April	77,986	54,030	(23,956)
May	86,459	69,279	(17,180)
TOTAL	$704,401	$605,937	$(98,464)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

As in the junior high schools, there was a decrease between 1977-78 and 1979-80 for seven of the nine months. April's decrease of $23,956 (30.1%) was the largest and December's decrease of $6,521 (5.4%) was the smallest. The median decrease was the May decrease of $17,180. At the senior high school level two months (April and January) had decreases in excess of $10,000, two months (February and May) showed decreases between $17,000 and $20,000, two months (March and November) had increases between $11,000 and $12,000, and only one month (December) with a decrease of $6,521, was less than $10,000.

September and October showed an increase in the monthly dollar costs. The September increase was $1,762 (1.8%) and the October increase was $13,901 (17.4%). It can also be noted that September's costs were the highest monthly costs in both 1977-78 and 1978-79, and October was ranked third in 1977-78 and second in 1979-80.

Adult Vocational-Technical School Monthly Dollar Costs

The monthly costs for the combined adult vocational-technical schools are presented in Table 11. The information contained in Table 11 was derived from the individual school monthly dollar costs which are presented in Appendix E. When examining Table 11 one can observe that for both 1977-78 and 1979-80 September had the highest monthly costs, January was ranked eighth, and December ninth. The lowest monthly cost in 1977-78 was December's cost of $6,301, the highest was September's cost of $11,354, and the median was the March cost of $7,367. During 1979-80 the monthly costs ranged from $5,590 in December to $12,283 in September, with the February cost of $7,718 being the median.

Only one month, December, showed a decrease between 1977-78 and 1979-80. The decrease in December was $711 (11.3%). It can be noted that December ranked ninth for both years studied. Increases were shown for the other eight months. These increases ranged from a high of $2,778 (34.4%) in October to a low of $106 (1.6%) in January. The median increase was $256.50. Two months (October and November) showed an increase in excess of $2,000, one month (September) had an increase of $929, and the other five months showed an increase of less than $300 each.

Table 11

Monthly Dollar Costs for Electric Energy
for All Adult Vocational-Technical Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$11,354	$12,283	$ 929
October	8,069	10,847	2,778
November	7,042	9,295	2,253
December	6,301	5,590	(711)
January	6,438	6,544	106
February	7,603	7,718	115
March	7,367	7,602	235
April	7,282	7,399	117
May	10,363	10,641	278
TOTAL	$71,819	$77,919	$ 6,100

[a] Number in parenthesis indicates a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

Monthly Dollar Costs for All Schools Combined

Table 12 presents the monthly dollar costs for all schools combined. The dollar costs contained in Table 12 are the combined monthly dollar costs as presented in Tables 7-11. As can be determined from a review of Table 12, September had the highest monthly costs for both 1977-78 and 1979-80. The monthly costs for 1977-78 for all schools combined ranged from December's low of $216,130 to September's high of $352,225, with the February cost of $255,686 being the median. The range for 1979-80 was from January's cost of $186,534 to September's $344,754. The March cost of $224,993 was the median.

Eight of the nine months showed a decrease in costs between 1977-78 and 1979-80. January's decrease of $49,552 (20.1%) was the largest, and September's decrease of $7,471 (2.1%) was the smallest. The median decrease was $34,124.50. Four months (January, April, February, and May) had decreases between $40,000 and $50,000, one month (December) had a decrease of $26,678, two months (November and March) had decreases between $11,000 and $12,000, and one month (September) showed a decrease of $7,471.

Table 12

Monthly Dollar Costs for Electric Energy
for All Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	$ 352,225	$ 344,754	$(7,471)
October	267,115	310,703	43,588
November	242,250	230,393	(11,857)
December	216,130	189,452	(26,678)
January	236,086	186,534	(49,552)
February	255,686	209,037	(46,649)
March	236,210	224,993	(11,217)
April	269,629	220,908	(48,721)
May	331,254	289,683	(41,571)
Total	$2,406,585	$2,206,457	$(200,128)

[a] Numbers in parenthesis indicate a decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78.

The month of October was the only month to show an increase for all schools combined. The October increase was $43,588, an increase of 16.3%. The October costs ranked fourth during 1977-78 and second during 1979-80.

Comparisons of Total School Electric Energy Consumption

The total school amounts of electric energy consumption from 9/1/77 through 5/31/78 were compared with the amounts from 9/1/79 through 5/31/80. These comparisons are presented for each of the 98 school centers included in the study and the previously defined categories of schools in Tables 13-18.

Elementary School Total Consumption

Presented in Table 13 are the comparisons relative to the consumption of electric energy for the 63 elementary schools studied. Of the 63 schools, 57 (90.5%) showed a savings when the consumption for 1977-78 was compared with that of 1979-80. The median rate of consumption for 1977-78 was 294,200 KWH while the median for 1979-80 was 250,470 KWH. The amounts saved ranged from a high of 208,612 KWH (35.6%) at McCoy Elementary School to a low of 89 KWH (.03%) at Rock Lake Elementary School. The median savings was 43,275 KWH. Three schools of the 57 (5.2%) had decreases of more than 200,000 KWH, 18 schools (31.7%) had decreases between 50,000 and 200,000, 22 schools (38.5%) had decreases between 25,000 and 50,000 KWH, 7 schools (12.3%) had decreases between 10,000 and 25,000 KWH, and 7 schools (12.3%) had decreases of less than 10,000 KWH.

There were six (9.5%) of the 63 elementary schools which showed an increase in consumption. The increases ranged from a low of 7,560 KWH (2.2%) at Apopka Elementary School to a high of 45,913 KWH (30.6%) at Grand Avenue Elementary School. The median increase was 11,334.5 KWH.

For the total of 63 elementary schools, 43 (68.3%) had a decrease of more than 25,000 KWH, while two (3.2%) had increases of more than 25,000 KWH. The reduction in total KWH consumption from 20,927,823 KWH in 1977-78 to 17,978,006 KWH in 1979-80 was a decrease of 2,949,817 KWH, a 14.1% decrease.

Table 13

Individual Elementary School
Electric Energy Consumption
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Aloma	343,440 KWH	305,460 KWH	(37,980) KWH
Apopka	351,360	358,920	7,560
Audubon Park	380,464	305,640	(74,824)
Azalea Park	274,796	215,422	(59,374)
Blankner	219,826	195,152	(24,674)
Bonneville	265,650	214,500	(51,150)
Brookshire	228,740	184,948	(43,792)
Catalina	240,226	203,733	(36,493)
Cheney	260,886	232,362	(28,524)
Chickasaw	294,806	292,243	(2,563)
Columbia	388,900	341,550	(47,350)
Conway	250,350	206,550	(43,800)
Cypress Park	90,120	101,100	10,980
Dillard Street	519,845	394,725	(125,120)
Dommerich	392,400	352,200	(40,200)
Dover Shores	287,154	264,771	(22,383)
Dream Lake	219,150	178,500	(40,650)
Durrance	227,060	182,920	(44,140)
Eccleston	406,750	321,418	(85,332)
Engelwood	280,176	248,984	(31,192)
Fern Creek	269,600	240,854	(28,746)
Grand Avenue	150,081	195,994	45,913
Hiawassee	364,516	313,536	(50,980)
Hillcrest	177,790	126,070	(51,720)
Ivey Lane	351,960	384,550	32,590
Kaley	178,839	142,896	(35,943)
Killarney	203,200	197,440	(5,760)
Lake Como	241,835	200,272	(41,563)
Lake Silver	181,746	173,543	(8,203)
Lake Sybelia	381,450	379,200	(2,250)
Lake Weston	303,300	196,500	(106,800)
Lakemont	222,130	207,300	(14,830)
Lancaster	318,750	288,750	(30,000)
Lockhart	154,620	130,770	(23,850)
Lovell	331,125	284,175	(46,950)
Maxey	321,120	275,294	(45,826)
McCoy	585,344	376,732	(208,612)
Oak Hill	850,400	679,700	(170,700)
Orange Center	398,739	410,428	11,689
Orlo Vista	266,100	222,825	(43,275)
Palmetto	902,080	699,024	(203,056)
Pershing	288,000	275,850	(12,150)
Pinar	868,350	878,068	9,718

Table 13

(continued)

School	1977-78	1979-80	Difference[a]
Pine Hills	156,701	139,698	(17,003)
Pineloch	224,162	197,036	(27,126)
Princeton	194,424	183,245	(11,179)
Ray	224,972	183,564	(41,408)
Richmond Heights	341,032	303,084	(37,948)
Ridgewood Park	360,240	259,800	(100,440)
Riverside	339,750	250,470	(89,280)
Rock Lake	265,715	265,626	(89)
Rolling Hills	318,000	259,350	(58,650)
Sadler	479,560	479,218	(342)
Shenandoah	348,540	304,320	(44,220)
Spring Lake	294,200	224,600	(69,600)
Tangelo Park	333,600	259,800	(73,800)
Tildenville	198,828	189,339	(9,489)
Union Park	344,775	268,875	(75,900)
Washington Shores	318,581	236,238	(82,343)
Wheatley	469,794	412,269	(57,525)
Windermere	335,700	306,150	(29,550)
Winegard	869,100	668,400	(200,700)
Zellwood	276,975	206,055	(70,920)
TOTAL	20,927,823 KWH	17,978,006 KWH	(2,949,817) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Special Education Center Total Consumption

The consumption of electric energy for the three special education centers is presented in Table 14. Two of the centers had a savings between 1977-78 and 1979-80 while one experienced an increase. The Magnolia Center experienced a savings of 221,700 KWH (34.8%), and the Gateway Center a savings of 110,115 KWH (37.2%). The Forrest Park Center had an increase of 1,116 KWH (.67%). The consumption for the three centers decreased from 1,098,289 KWH in 1977-78 to 767,590 KWH in 1979-80, an amount of 330,699 KWH which represents a 30% decrease.

Table 14

Individual Special Education Center
Electric Energy Consumption
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Forrest Park	164,704 KWH	165,820 KWH	1,116 KWH
Gateway	295,785	185,670	(110,115)
Magnolia	637,800	416,100	(221,700)
TOTAL	1,098,289 KWH	767,590 KWH	(330,699) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Junior High School Total Consumption

As shown in Table 15 there were 19 junior high schools included in the investigation. Of the 19 schools, 16 (84.2%) had a decrease in the consumption of electric energy when the consumption for 1977-78 was compared to that of 1979-80. The median consumption for 1977-78 was 573,156 KWH which was decreased to a median of 481,176 in 1979-80. The greatest amount saved among the 16 schools was 950,600 KWH (54.6%) at Westridge Junior High School, an amount which exceeded the next highest savings by 567,200 KWH. The least amount of decrease was 9,944 KWH (2.2%) at Lockhart Junior High School. Seven (43.8%) of the 16 schools had a decrease of over 100,000 KWH, 3 schools (18.8%) had a decrease between 50,000 and 100,000 KWH, 5 schools (31.2%) had a decrease between 25,000 and 50,000 KWH, while 1 of the 16 had a decrease under 10,000 KWH. The median decrease was 75,628 KWH.

Three of the 19 schools (15.8%) had an increase in consumption. These increases ranged from a low of 13,680 KWH (1.7%) at Union

Park Junior High School to a high of 81,168 KWH (8.5%) at Robinswood Junior High School. Memorial Junior High School was the third school and experienced an increase of 17,358 KWH (3.9%).

For the total of 19 junior high schools, 10 (52.6%) showed a decrease of more than 50,000 KWH, and one had an increase greater than 50,000 KWH. The total consumption for all junior high schools was reduced from 14,606,273 KWH in 1977-78 to 11,811,656 KWH in 1979-80, a reduction of 2,794,617 KWH (19.1%).

Table 15

Individual Junior High School
Electric Energy Consumption
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Apopka	811,900 KWH	681,300 KWH	(130,600) KWH
Carver	754,090	694,813	(59,277)
Conway	966,900	644,100	(322,800)
Glenridge	405,900	375,450	(30,450)
Howard	348,499	296,575	(51,924)
Jackson	573,156	481,176	(91,980)
Lakeview	396,630	350,955	(45,675)
Lee	517,293	476,270	(41,023)
Liberty	1,641,000	1,257,600	(383,400)
Lockhart	445,344	435,400	(9,944)
Maitland	348,000	320,400	(27,600)
Meadowbrook	1,314,600	959,400	(355,200)
Memorial	444,093	461,451	17,358
Ocoee	553,500	435,150	(118,350)
Robinswood	951,708	1,032,876	81,168
Union Park	817,200	830,880	13,680
Walker	1,125,300	867,300	(258,000)
Westridge	1,742,360	791,760	(950,600)
Winter Park	448,800	418,800	(30,000)
TOTAL	14,606,273 KWH	11,811,656 KWH	(2,794,617) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Senior High School Total Consumption

As is shown in Table 16 there was a decrease between 1977-78 and 1979-80 in the electric energy consumption at eight of the nine senior high schools. In 1977-78 the median consumption was 2,042,300 KWH while in 1979-80 it was reduced to 1,660,050 KWH. The decreases in consumption ranged from a high of 502,200 KWH (20.2%) at Oak Ridge High School to a low of 96,827 KWH (9.3%) at Edgewater High School. The median savings was 160,238 KWH. Of the eight schools, three (37.5%) had decreases in excess of 300,000 KWH, four (50%) had decreases between 100,000 and 200,000 KWH, and one school had a decrease of less than 100,000 KWH.

Table 16

Individual Senior High School
Electric Energy Consumption
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Apopka	2,508,300 KWH	2,361,000 KWH	(147,300) KWH
Boone	1,387,188	1,214,012	(173,176)
Colonial	1,631,794	1,484,721	(147,073)
Edgewater	1,036,385	939,558	(96,827)
Evans	2,042,300	1,660,050	(382,250)
Jones	803,368	689,039	(114,329)
Oak Ridge	2,488,500	1,986,300	(502,200)
West Orange	2,888,798	2,423,000	(465,798)
Winter Park	3,028,000	3,386,000	358,000
TOTAL	17,814,633 KWH	16,143,680 KWH	(1,670,953) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

One school, Winter Park High School, showed an increase in its consumption. The increase amounted to 358,000 KWH which represented an 11.8% increase. The total consumption for the nine schools was reduced from 17,814,633 KWH in 1977-78 to 16,143,680 KWH in 1979-80, a decrease of 1,670,953 KWH (9.4%).

Adult Vocational-Technical School Total Consumption

There were four adult vocational-technical schools included in the study. As can be determined from Table 17 two of the schools showed a decrease when the electric energy consumption for 1977-78 was compared to 1979-80. The two decreases were at Webster Adult School, 64,200 KWH (14.3%), and Westside Adult School, 39,994 KWH (7.5%). The other two schools had increases in the amount of 58,247 KWH (22.9%) at McCoy Adult School and 17,340 KWH (5.7%) at Orange County Adult School. Total consumption for 1977-78 was 1,539,113 KWH which was decreased to 1,510,506 KWH for 1979-80, a decrease of 28,607 KWH (1.9%).

Table 17

Individual Adult Vocational-Technical School
Electric Energy Consumption
for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
McCoy	254,270 KWH	312,517 KWH	58,247 KWH
Orange County	302,409	319,749	17,340
Webster	450,300	386,100	(64,200)
Westside	532,134	492,140	(39,994)
TOTAL	1,539,113 KWH	1,510,506 KWH	(28,607)

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Total Consumption for Categories of Schools and All Schools Combined

Presented in Table 18 is information relative to the total consumption of electric energy for the five categories and all schools combined. The totals from Tables 13-17 have been placed in Table 18 so that it can be readily seen that there was an overall decrease in consumption between 1977-78 and 1979-80. A review of Tables 13-17 will reveal that 85 (86.7%) of the 98 schools involved in the study were responsible for bringing about the decrease. The average rate of consumption for the 63 elementary schools decreased from 332,187.8 KWH to 285,365.2 KWH (14.1%), for the three special education centers from 366,096.3 KWH to 255,863.3 KWH (30.1%), for the 19 junior high schools from 768,751.2 KWH to 621,666.1 KWH (19.1%), for the nine senior high schools from 1,979,403.7 KWH to 1,793,742.2 KWH (9.4%), and for the four adult vocational-technical schools from 384,778.3 KWH to 377,626.5 KWH (1.9%). The total consumption for 1977-78 was 55,986,131 KWH compared to 48,211,438 KWH for 1979-80. The difference between these two time periods was 7,774,693 KWH which represents a 13.9% decrease in electric energy consumption.

Table 18

Electric Energy Consumption for Categories of Schools and All Schools Combined for 1977-78 and 1979-80

School	1977-78	1979-80	Difference[a]
Elementary Schools	20,927,823 KWH	17,978,006 KWH	(2,949,817) KWH
Special Education Schools	1,098,289	767,590	(330,699)
Junior High Schools	14,606,273	11,811,656	(2,794,617)
Senior High Schools	17,814,633	16,143,680	(1,670,953)
Adult Vocational-Technical Schools	1,539,113	1,510,506	(28,607)
All Schools Combined	55,986,131 KWH	48,211,438 KWH	(7,774,693) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Comparisons of Monthly Consumption of Electric Energy

The monthly amounts of consumption of electric energy from 9/1/77 through 5/31/78 were compared with the consumption from

9/1/79 through 5/31/80. Those comparisons are presented for each of the five classifications of school centers and all schools combined in Tables 19-24. Information relative to the monthly consumption for each individual school center is contained in Appendices F-J.

Elementary School Monthly Consumption

The monthly consumption for each of the nine months studied in 1977-78 and 1979-80 is presented for all elementary schools combined in Table 19. The information which enabled the combined consumption to be calculated is presented by individual school in Appendix F. Examining Table 19 one can observe that the consumption for September was the highest and May the second highest for both 1977-78 and 1979-80. These two months represent the first and last month of the study. The monthly consumption for 1977-78 ranged from a low of 1,815,830 KWH in December to a high of 3,193,230 KWH in September. The median consumption for 1977-78 was the February consumption of 2,159,916 KWH. The monthly consumption for 1979-80 ranged from 1,547,538 KWH in December to 2,693,025 KWH in September. The 1979-80 median consumption was the March consumption of 1,809,237 KWH.

One can also observe that there was a decrease between 1977-78 and 1979-80 in consumption in elementary schools for eight of the nine months. The decreases ranged from a high of 533,888 KWH, a decrease of 23.6% in April, to a low of 191,885 KWH, a decrease of 9.6% in March. The median decrease was 372,904 KWH. Three of the eight months (April, May, and September) had decreases in excess of 500,000 KWH, three months (January, February, and November) had decreases between 300,000 and 400,000 KWH, and the other two months

(December and March) had decreases of 268,292 KWH and 191,885 KWH respectively.

There was one month (October) during which an increase occurred. October's increase was 128,771 KWH, an increase of 5.6%. The monthly consumption for October ranked third in both 1977-78 and 1979-80.

Table 19

Monthly Electric Energy Consumption
for All Elementary Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	3,193,230 KWH	2,693,025 KWH	(500,205) KWH
October	2,289,371	2,418,142	128,771
November	2,152,228	1,846,604	(305,624)
December	1,815,830	1,547,538	(268,292)
January	2,022,872	1,633,139	(389,733)
February	2,159,916	1,803,841	(356,075)
March	2,001,122	1,809,237	(191,885)
April	2,266,610	1,732,722	(533,888)
May	3,026,644	2,493,758	(532,886)
TOTAL	20,927,823 KWH	17,978,006 KWH	(2,949,817)

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Special Education Center Monthly Consumption

The special education centers combined amounts of electric energy consumption for 1977-78 and 1979-80 are shown in Table 20. The combined totals were calculated from the information contained in Appendix G. A review of Table 20 will reveal that the amounts of consumption for December and January were ranked eighth and ninth respectively for the two years studied. The monthly consumption for 1977-78 ranged from a low of 85,305 KWH in January to a high of 167,133 KWH in March. The median amount of consumption for 1977-78 was 123,394 KWH. In 1979-80 the monthly consumption ranged from a low of 66,790 KWH in January to a high of 104,954 KWH in October. February's consumption of 84,144 KWH was the 1979-80 median.

In the special education center category there was a decrease between 1977-78 and 1979-80 for each of the 9-month periods. The decreases ranged from a high of 87,681 KWH (52.5%) in March to a low of 6,037 KWH (5.4%) in October. The median decrease in consumption was December's amount of 27,871 KWH. Three of the decreases (March, February, and April) were in excess of 50,000 KWH, four months (May, December, November, and September) had decreases between 24,000 and 32,000 KWH, and two months (January and October) had decreases of less than 20,000 KWH.

Table 20

Monthly Electric Energy Consumption
for All Special Education Centers Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	125,413 KWH	101,104 KWH	(24,309) KWH
October	110,991	104,954	(6,037)
November	107,383	82,954	(24,429)
December	98,706	70,835	(27,871)
January	85,305	66,790	(18,515)
February	139,481	84,144	(55,337)
March	167,133	79,452	(87,681)
April	140,483	85,652	(54,831)
May	123,394	91,705	(31,689)
TOTAL	1,098,289 KWH	767,590 KWH	(330,699) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Junior High School Monthly Consumption

The information as presented in Table 21 represents the combined monthly amounts of electric energy consumption for all junior high schools. Appendix H contains the individual school information from which the combined amounts of consumption were developed. An examination of Table 21 will show that in both 1977-78 and 1979-80 September had the highest amount of consumption and December the lowest. The 1977-78 monthly consumption ranged from a low of 1,342,643 KWH in December to a high of 2,034,986 KWH in September with November's amount of 1,554,954 KWH being the median. In 1979-80 the monthly consumption ranged from a low of 972,058 KWH in December to a high of 1,715,572 KWH in September. The March consumption of 1,274,582 KWH was the median for 1979-80.

There was a decrease in consumption between 1977-78 and 1979-80 during all nine months studied. The largest decrease was in January, a decrease of 433,418 KWH (29.5%). The smallest decrease came in March in the amount of 86,569 KWH (6.4%). Of the nine months, six (January, March, April, December, February, and September) had decreases between 310,000 KWH and 435,000 KWH. The other two months (October and March) had decreases of 125,301 KWH and 86,569 KWH respectively. The median decrease was February's 360,644 KWH.

Table 21

Monthly Electric Energy Consumption
for All Junior High Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	2,034,986 KWH	1,715,572 KWH	(319,414) KWH
October	1,727,037	1,601,736	(125,301)
November	1,554,954	1,276,575	(278,379)
December	1,342,643	972,058	(370,585)
January	1,471,506	1,038,088	(433,418)
February	1,516,829	1,156,185	(360,644)
March	1,361,151	1,274,582	(86,569)
April	1,610,176	1,205,521	(404,655)
May	1,986,991	1,571,339	(415,652)
TOTAL	14,606,273 KWH	11,811,656 KWH	(2,794,617) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Senior High School Monthly Consumption

Presented in Table 22 are the comparisons of the combined monthly amounts of electric energy consumption for the nine senior high schools. The information from which the combined amounts were calculated is found in Appendix I. As can be seen from a review of Table 22, September had the highest monthly consumption for both 1977-78 and 1979-80. Monthly consumption for 1977-78 ranged from 1,665,692 KWH in December to 2,553,482 KWH in September, with April's amount of 1,889,145 being the median. The monthly amounts for 1979-80 ranged from January's low of 1,347,338 KWH to September's high of 2,267,371 KWH. February's amount of 1,693,877 KWH was the 1979-80 median.

Table 22

Monthly Electric Energy Consumption
for All Senior High Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	2,553,482 KWH	2,267,371 KWH	(286,111) KWH
October	2,010,596	2,064,372	53,776
November	2,130,014	1,786,475	(343,539)
December	1,665,692	1,658,366	(7,326)
January	1,785,465	1,347,338	(438,127)
February	1,865,115	1,693,877	(171,238)
March	1,771,689	1,687,962	(83,727)
April	1,889,145	1,585,205	(303,940)
May	2,143,435	2,052,714	(90,721)
TOTAL	17,814,633 KWH	16,143,680 KWH	(1,670,953) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

For the senior high school category there was a decrease between 1977-78 and 1979-80 for eight of the nine months. January's decrease of 438,127 KWH (24.5%) was the largest and December's decrease of 7,326 KWH (.44%) was the smallest. The median decrease was at 228,674.5 KWH. Four months (January, November, April, and September) had decreases which ranged between 275,000 and 450,000 KWH, another three months (February, May, and March) had decreases which ranged between 80,000 and 180,000 KWH, and one month (December) showed a decrease of less than 10,000 KWH.

October showed an increase in the monthly consumption. The October increase was 53,776 KWH (2.7%). October ranked fourth in total consumption in 1977-78 and second in 1979-80.

Adult Vocational-Technical School Monthly Consumption

The monthly amounts of consumption for the combined adult vocational-technical schools combined are presented in Table 23. The information contained in Table 23 was derived from the individual school monthly amounts which are presented in Appendix J. When examining Table 23 one can observe that for both 1977-78 and 1979-80 September had the highest monthly consumption, and April, January, and December ranked seventh, eighth, and ninth respectively.

The lowest monthly consumption in 1977-78 was December's amount of 129,996 KWH, and the highest was September's 252,482 KWH. The median consumption for 1977-78 was November's 155,375 KWH. During 1979-80 the monthly consumption ranged from 109,754 KWH in December to 234,213 KWH in September, with February's 153,929 KWH being the median.

Seven of the nine months showed a decrease in electric energy consumption between 1977-78 and 1979-80. The decreases ranged from a high of 20,242 KWH (15.6%) in December to a low of 9,552 KWH (5.8%) in February. The decreases for five months (December, September, May, April, and March) ranged between 10,100 KWH and 20,300 KWH. The other two months (January and February) had decreases of 9,880 KWH and 9,552 KWH respectively. The median decrease was April's rate of 10,946 KWH.

Table 23

Monthly Electric Energy Consumption
for All Adult Vocational-Technical Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	252,482 KWH	234,213 KWH	(18,269) KWH
October	184,031	215,604	31,573
November	155,375	186,713	31,338
December	129,996	109,754	(20,242)
January	135,485	125,605	(9,880)
February	163,481	153,929	(9,552)
March	154,149	143,993	(10,156)
April	146,948	136,002	(10,946)
May	217,166	204,693	(12,473)
TOTAL	1,539,113 KWH	1,510,506 KWH	(28,607) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Increases were shown for two months, October and November. The increase for October was 31,573 KWH (17.2%), and the increase for November was 31,338 KWH (20.2%).

Monthly Consumption for All Schools Combined

Presented in Table 24 are the monthly amounts of electric energy consumption for all schools combined. The amounts contained in Table 24 are the combined amounts of consumption as presented in Tables 19-23. As can be determined from Table 24, September had the highest monthly consumption for both 1977-78 and 1979-80. The monthly consumption for 1977-78 for all schools combined ranged from December's low of 5,052,867 KWH to September's high of 8,159,593 KWH, with the April amount of 6,053,362 KWH being the median. The range for 1979-80 was from January's 4,210,960 KWH to September's 7,011,285 KWH. The March consumption of 4,995,226 KWH was the median.

Table 24

Monthly Electric Energy Consumption
for All Schools Combined
9/1/77-5/31/78 and 9/1/79-5/31/80

Month	1977-78	1979-80	Difference[a]
September	8,159,593 KWH	7,011,285 KWH	(1,148,308) KWH
October	6,322,026	6,404,808	82,782
November	6,099,954	5,179,321	(920,633)
December	5,052,867	4,358,551	(694,316)
January	5,500,633	4,210,960	(1,289,673)
February	5,844,822	4,891,976	(952,846)
March	5,455,244	4,995,226	(460,018)
April	6,053,362	4,745,102	(1,308,260)
May	7,497,630	6,414,209	(1,083,421)
Total	55,986,131 KWH	48,211,438 KWH	(7,774,693) KWH

[a] Numbers in parenthesis indicate a decrease in the amount of electric energy consumed in 1979-80 from that consumed in 1977-78.

Eight of the nine months showed a decrease in consumption between 1977-78 and 1979-80. April's decrease of 1,308,260 KWH (21.6%) was the largest, and March's decrease of 460,018 (8.4%) was the smallest. The median decrease was 1,018,133.5 KWH. Four of the eight months (April, January, September, and May) had a decrease of over 1,000,000 KWH, two months (February and November) had decreases between 900,000 and 1,000,000 KWH, and two months (December and March) had decreases of 694,316 KWH and 460,018 KWH respectively.

The month of October was the only month to show an increase for all schools combined. The October increase was 82,782 KWH or an increase of 13.1%. In total consumption October ranked third during both 1977-78 and 1979-80.

Comparisons of Dollar Costs Adjusted by the Costs of Funding the Monetary Incentive Program

The purpose of the information presented in Tables 25-30 is to show how the cost of funding the monetary incentive program impacted the gross dollar difference between 1977-78 and 1979-80. In Tables 25-30 the first column, "gross difference," represents the difference in dollar costs between 1977-78 and 1979-80 as were shown in Tables 1-6 respectively. If there was a gross decrease in cost the amount shown in the first column will be in parentheses. The figures in the second column represent the amount of the incentive award generated by each school (50% of the amount was allocated to the school generating it). The awards were calculated through the use of the formula which was explained in Chapter III. Appendix K contains information relative to the adjustment factors which were taken into consideration in the calculation of the cost of funding the program. In addition, Appendix L contains a listing of those schools which received special incentive awards (as described in Chapter III). These award amounts are included as appropriate in the second column of the tables.

The third column of Tables 25-30 contains the net dollar difference between 1977-78 and 1979-80. In the event the gross difference was an increase, the cost of funding the monetary incentive was added to that increase, and the amount shown in the third column indicates a net dollar increase between the two years. If the gross difference was a decrease, the cost of funding the monetary incentive was subtracted from that decrease, and the amount shown in the third column indicates a net decrease if in parentheses, or a net increase if there is no parentheses.

Adjusted Elementary School Costs

Contained in Table 25 is information relative to the gross difference in individual elementary school costs between 1977-78 and 1979-80 as adjusted by the cost of funding the monetary incentive awards. A review of Table 25 will reveal that 57 (90.5%) of the 63 elementary schools studied generated an incentive award. These incentive awards ranged from a high of $10,024.97 generated by Winegard Elementary School, to a low of $3.24 generated by Rock Lake Elementary School. The median incentive award was $1,870. Of the 57 schools earning an award, 5 schools (8.8%) earned in excess of $5,000, 13 schools (22.8%) earned between $2,500 and $5,000, 19 schools (33.3%) earned between $1,500 and $2,500, 13 schools (22.8%) earned between $500 and $1,500, and 7 schools (12.3%) earned less than $500. A review of Appendix L will reveal that the following elementary schools received special incentive awards: Winegard ($400), McCoy ($200), and Palmetto ($50).

An analysis of the third column in Table 25 will show that 8 of the 63 elementary schools (12.7%) had a net decrease in dollar costs when the gross difference between 1977-78 and 1979-80 was adjusted by the cost of funding the monetary incentive program. These net decreases in dollar costs ranged from a high at Rock Lake Elementary School of $1,787.76 to a low of $37.38 at Lake Weston Elementary

School. The median net decrease was $284.23. Of the 8 schools, 2 schools (25%) had a net decrease in excess of $1,000, 1 school (12.5%) had a net decrease of between $500 and $1,000, and 5 schools (62.5%) had a net decrease of less than $500.

Table 25
Difference in Individual Elementary School 1977-78 and 1979-80 Dollar Costs for Electric Energy Adjusted by the Cost of Funding the Monetary Incentive Program

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Aloma	$ 315.00	$ 1,329.17	$ 1,644.17
Apopka	3,854.00	-0-	3,854.00
Audubon Park	(2,853.00)	3,838.47	985.47
Azalea Park	(2,252.00)	2,591.68	339.68
Blankner	(451.00)	1,077.02	626.02
Bonneville	(397.00)	2,670.03	2,273.03
Brookshire	(1,262.00)	1,852.40	590.40
Catalina	(2,389.00)	1,724.29	(664.71)
Cheney	(839.00)	1,091.04	252.04
Chickasaw	(507.00)	110.72	(396.28)
Columbia	(901.00)	2,258.60	1,357.60
Conway	(755.00)	1,872.45	1,117.45
Cypress Park	858.00	-0-	858.00
Dillard Street	(1,248.00)	5,630.40	4,382.40
Dommerich	306.00	2,351.70	2,657.70
Dover Shores	(873.00)	1,077.74	204.74
Dream Lake	(853.00)	1,792.67	939.67
Durrance	(1,093.00)	2,065.75	972.75
Eccleston	(2,336.00)	3,686.34	1,350.34
Engelwood	(1,355.00)	1,796.66	441.66
Fern Creek	(2,672.00)	1,358.25	(1,313.75)
Grand Avenue	1,550.00	-0-	1,550.00
Hiawassee	(1,056.00)	2,087.63	1,031.63
Hillcrest	(1,611.00)	2,699.78	1,088.78
Ivey Lane	358.00	-0-	358.00
Kaley	(1,336.00)	1,827.70	491.70
Killarney	1,322.00	259.20	1,581.20
Lake Como	(1,949.00)	1,776.82	(172.18)
Lake Silver	596.00	413.43	1,009.43
Lake Sybelia	2,498.00	92.04	2,590.04
Lake Weston	(3,738.00)	3,700.62	(37.38)
Lakemont	(365.00)	540.55	175.55
Lancaster	542.00	1,296.00	1,838.00

Table 25

(continued)

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Lockhart	(67.00)	1,083.98	1,016.98
Lovell	(1,090.00)	2,070.50	980.50
Maxey	(385.00	2,000.30	1,615.30
McCoy	(7,487.00)	9,856.92	2,369.92
Oak Hill	(1,661.00)	7,758.32	6,097.32
Orange Center	107.00	-0-	107.00
Orlo Vista	(521.00)	1,713.69	1,192.69
Palmetto	(4,974.00)	8,132.39	3,158.39
Pershing	1,242.00	503.01	1,745.01
Pinar	7,108.00	-0-	7,108.00
Pine Hills	(744.00)	856.95	112.95
Pineloch	(1,355.00)	1,196.26	(158.74)
Princeton	66.00	568.45	634.45
Ray	(1,629.00)	2,105.60	476.60
Richmond Heights	(1,080.00)	1,536.90	456.90
Ridgewood Park	(2,740.00)	3,841.83	1,101.83
Riverside	(863.00)	4,580.06	3,717.06
Rock Lake	(1,791.00)	3.24	(1,787.76)
Rolling Hills	(787.00)	2,797.61	2,010.61
Sadler	(185.00)	13.39	(171.61)
Shenandoah	574.00	1,870.51	2,444.51
Spring Lake	(1,904.00)	2,850.12	946.12
Tangelo Park	(1,191.00)	2,490.75	1,299.75
Tildenville	687.00	448.35	1,135.35
Union Park	(2,183.00)	3,586.27	1,403.27
Washington Shores	(2,630.00)	3,223.73	593.73
Wheatley	932.00	2,433.31	3,365.31
Windermere	738.00	1,170.18	1,908.18
Winegard	(8.00)	10,024.97	10,016.97
Zellwood	(1,976.00)	3,350.97	1,374.97
TOTAL	$(46,689.00)	$136,937.71	$ 90,248.71

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

Fifty-five (87.3%) of the 63 elementary schools had a net increase in dollar costs. The net increases in dollar costs ranged from a high of $10,016.97 at Winegard Elementary School to a low of $107 at Orange

Center Elementary School. The median increase was $1,135.35. Of the 55 schools which had an increase, 3 schools (5.5%) had net increases in excess of $5,000, 7 schools (12.7%) had a net increase between $2,500 and $5,000, 11 schools (20%) had a net increase between $1,500 and $2,500, 23 schools (41.8%) had a net increase between $500 and $1,500, and 11 schools (20%) had a net increase of less than $500.

A review of the totals in Table 25 shows that the cost of funding the monetary incentive program for the elementary schools was $136,937.71. Prior to the inculsion of that amount there was a gross decrease in dollar costs between 1977-78 and 1979-80 of $46,689. However, when the cost of funding the program was taken into account the net difference between 1977-78 and 1979-80 was an increase of $90,248.71.

Adjusted Special Education Center Costs

As shown in Table 26 there was a net increase in the dollar costs between 1977-78 and 1979-80 for the three special education centers combined. The amounts shown in the first column represent a gross decrease of $11,266. When adjusted by the cost of funding the incentive awards, $12,798.97, the gross decrease became an overall net increase of $1,532.97 between the two years.

Two of the three centers generated an incentive award, Gateway in the amount of $3,121.76, and Magnolia in the amount of $9,677.21. Gateway had a net decrease of $889.24. Magnolia and Forrest Park had net increases of $2,392.21 and $30.00 respectively. As shown in Appendix L, the Magnolia Center also received a special incentive award of $100.

Table 26

Difference in Individual Special Education Center
1977-78 and 1979-80 Dollar Costs for
Electric Energy Adjusted by the Cost
of Funding the Monetary Incentive Program

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Forrest Park	$ 30.00	$ -0-	$ 30.00
Gateway	(4,011.00)	3,121.76	(889.24)
Magnolia	(7,285.00)	9,677.21	2,392.21
TOTAL	$(11,266.00)	$12,798.97	$ 1,532.97

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

Adjusted Junior High School Costs

The adjusted dollar costs for each of the 19 junior high schools are shown in Table 27. From the table it can be seen that 16 (84.2%) of the 19 junior high schools generated an incentive award. These awards ranged from a maximum of $39,354.84 at Westridge Junior High School to a minimum of $407.21 at Lockhart Junior High School. The median incentive award was $3,064.50. Two of the 16 schools (12.5%), Westridge at $39,354.84 and Liberty at $25,361.91, generated more than $20,000 in incentive awards. It is noted that these two schools were constructed from identical plans with the exception that Liberty had a gymnasium while Westridge did not. Three of the 16 schools (18.8%) generated incentive awards of between $10,000 and $16,000, 6 schools (37.5%) generated awards of between $2,000 and $10,000, and 5 schools (31.2%) earned awards of less than $2,000. As shown in

Appendix L, Westridge Junior High and Liberty Junior High Schools received special incentive awards of $400 and $200 respectively.

Table 27

Difference in Individual Junior High School 1977-78 and 1979-80 Dollar Costs for Electric Energy Adjusted by the Cost of Funding the Monetary Incentive Program

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Apopka	$(46.00)	$ 5,230.53	$ 5,184.53
Carver	(1,010.00)	2,374.04	1,364.04
Conway	(6,223.00)	13,363.92	7,140.92
Glenridge	766.00	1,151.01	1,917.01
Howard	(1,443.00)	2,570.24	1,127.24
Jackson	(2,526.00)	3,559.63	1,033.63
Lakeview	(16.00)	2,178.70	2,162.70
Lee	(929.00)	1,716.81	787.81
Liberty	(6,382.00)	25,361.91	18,979.91
Lockhart	3,202.00	407.21	3,609.21
Maitland	479.00	1,692.72	2,171.72
Meadowbrook	(9,087.00)	15,984.00	6,897.00
Memorial	978.00	-0-	978.00
Ocoee	(6,143.00)	5,325.75	(817.25)
Robinswood	1,758.00	-0-	1,758.00
Union Park	6,170.00	-0-	6,170.00
Walker	(6,067.00)	11,610.00	5,543.00
Westridge	(25,647.00)	39,354.84	13,707.84
Winter Park	2,357.00	1,147.50	3,504.50
TOTAL	$(49,809.00)	$133,028.81	$ 83,219.81

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

Examining the third column of Table 27 one can observe that 1 of the 19 junior high schools (5.3%) had a net decrease in dollar costs. Eighteen of the 19 junior high schools (94.7%) had a net increase in dollar costs. The highest net increase of $18,979.91 was at Liberty Junior High School, and the lowest of $787.81 was at Lee

Junior High School. The median net increase was $2,837.50. Two of the 18 schools (11.1%) had net increases in excess of $10,000, 5 schools (27.8%) had net increases between $5,000 and $10,000, 4 schools (22.2%) had net increases between $2,000 and $5,000, 5 schools (27.8%) had net increases between $1,000 and $2,000, and 2 schools (11.1%) had net increases of less than $1,000.

As can be determined by a review of the totals from Table 27, the cost of funding the monetary incentive program for the junior high schools was $133,028.81. The gross difference between 1977-78 and 1979-80 in dollar costs for the junior high schools was a decrease of $49,809. When the cost of funding the program was taken into account the gross difference decrease became a net increase of $83,219.81.

Adjusted Senior High School Costs

Shown in Table 28 are the dollar costs data for each of the nine senior high schools. As can be seen from Table 28, eight (88.9%) of the nine senior high schools generated an incentive award. These awards ranged from a high of $30,441.53 at West Orange High School to a low of $4,008.64 at Edgewater High School. The median incentive award at the high school level was $8,263.55. Two of the eight schools (25%) generated an incentive award in excess of $20,000, one school (12.5%) generated an incentive award of $15,309.11, four schools (50%) generated between $5,000 and $10,000, and one school (12.5%) generated less than $5,000.00. As is shown in Appendix L, West Orange High School received a special incentive award valued at $400.

The third column of Table 28 contains information which shows that three of the nine senior high schools (33.3%) had a net decrease in dollar costs between 1977-78 and 1979-80. The greatest net decrease was at Winter Park High School, $11,750. Apopka and Oak Ridge High Schools had net decreases of $4,610.25 and $3,860.95 respectively.

Table 28

Difference in Individual Senior High School 1977-78 and 1979-80 Dollar Costs for Electric Energy Adjusted by the Cost of Funding the Monetary Incentive Program

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Apopka	$(13,712.00)	$ 9,101.75	$(4,610.25)
Boone	(6,308.00)	7,425.36	1,117.36
Colonial	(1,894.00)	6,949.20	5,055.20
Edgewater	(3,254.00)	4,008.64	754.64
Evans	(7,512.00)	15,309.11	7,797.11
Jones	(5,514.00)	5,813.63	299.63
Oak Ridge	(25,330.00)	21,469.05	(3,860.95)
West Orange	(23,190.00)	30,441.53	7,251.53
Winter Park	(11,750.00)	-0-	(11,750.00)
TOTAL	$(98,464.00)	$100,518.27	$ 2,054.27

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

Six of the nine senior high schools (66.7%) had a net increase in dollar costs. The greatest net increase of $7,797.11 was at Evans High School and the smallest was $299.63 at Jones High School. The median net increase was $3,086.28. Three of the six schools (50%) had a net increase in excess of $5,000, one school (16.7%) had a net increase of $1,117.36, and two schools (33.3%) had net increases of less than $1,000.

As can be seen from a review of the totals from Table 28, the cost of funding the incentive program for the senior high schools combined was $100,518.27. The gross difference in dollar costs at the senior high school level was a decrease of $98,464. When the cost of funding the program was considered, the net decrease between 1977-78 and 1979-80 became a net increase of $2,054.27.

Adjusted Adult Vocational-Technical School Costs

As Table 29 shows, two adult vocational-technical schools generated an incentive award. Webster generated $3,092.96 and Westside generated $1,817.73. The gross difference in costs between 1977-78 and 1979-80 for the adult vocational-technical schools combined was an increase of $6,100. When the cost of funding the two incentives, $4,910.69, was added to the gross increase, the net difference between 1977-78 and 1979-80 became a net increase of $11,010.69.

Table 29

Difference in Individual Adult Vocational-Technical School 1977-78 and 1979-80 Dollar Costs for Electric Energy Adjusted by the Cost of Funding the Monetary Incentive Program

School	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
McCoy	$2,811.00	$ -0-	$ 2,811.00
Orange County	624.00	-0-	624.00
Webster	411.00	3,092.96	3,503.96
Westside	2,254.00	1,817.73	4,071.73
TOTAL	$6,100.00	$4,910.69	$11,010.69

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

Adjusted Costs for Categories of Schools and All Schools Combined

Of the 98 schools included in the study, 85 (86.7%) generated an incentive award. As shown in Table 30, the total cost of funding the monetary incentive awards, including the $1,750 in special incentive awards listed in Appendix L, was $388,194.45. The gross difference in dollar costs between 1977-78 and 1979-80 for all schools combined was a decrease of $200,128. When the cost of funding the incentive awards was subtracted from the gross decrease the net increase between the two years was $188,066.45.

Table 30

Difference in 1977-78 and 1979-80 Dollar Costs for Electric Energy for Categories of Schools and All Schools Combined Adjusted by the Cost of Funding the Monetary Incentive Program

School Category	Gross Difference Between 1977-78 and 1979-80	Cost of Funding[a] Monetary Incentive Program	Net Difference[b] Between 1977-78 and 1979-80
Elementary	$(46,689.00)	$136,937.71	$ 90,248.71
Special Education	(11,266.00)	12,798.97	1,532.97
Junior High	(49,809.00)	133,028.81	83,219.81
Senior High	(98,464.00)	100,518.27	2,054.27
Adult Vocational-Technical	6,100.00	4,910.69	11,010.69
All Schools Combined	$(200,128.00)	$388,194.45	$188,066.45

[a] Cost includes the allocation of special incentive awards granted to those schools saving the greatest amount of electric energy.

[b] Numbers in parenthesis indicate a net decrease in the amount of dollars expended in 1979-80 from those expended in 1977-78 after the adjustment for the cost of funding the monetary incentive program.

As shown in Table 30 the net increases for categories of schools ranged from a high of $90,248.71 for the elementary school category to a low of $1,532.97 for the special education centers. The junior high school category had a net increase of $83,219.81 and the senior high and adult vocational-technical school categories had net increases of $2,054.27 and $11,010.69 respectively.

Allocation of Incentive Awards by Category and Item

Shown in Table 31 is a percentage distribution of the manner in which the incentive awards received (50% of the total amount generated) were allocated by local school personnel for each of the five categories of schools, and all schools combined. The information presented in Table 31 is a synthesis of the information presented in Appendix M. A review of Appendix M will show the manner in which individual schools allocated the incentive award funds received to the two major categories, instruction and support, and the several items as listed within each category. As previously noted, the individual schools received 50% of the amount of the awards shown in the second column of Tables 25-29.

Examining Table 31 one can observe that 85.64% of the incentive funds received by the schools were allocated to instructional categories, and 14.36% were allocated to support categories. The percentage of incentive awards received which was allocated to instructional categories ranged from 100% for at the special education centers to 25% for the adult vocational-technical schools. For the elementary school, special education center, junior high school, and senior high school categories, over 65% of the funds received were allocated to instructional items. The percentage of incentive awards which was allocated to the support items ranged from a high of 75% for the adult vocational-technical schools to no allocation for the special education centers level. For the elementary, special education center, junior high school, and senior high school categories, less than 33% of the funds received were allocated to support items.

Table 31

Percentage Distribution by Category and Item of Allocated Expenditures of Energy Incentive Award Funds by Category of Schools and All Schools Combined

Category and Item	Elementary Schools	Special Education Centers	Junior High Schools	Senior High Schools	Adult Vocational Technical Schools	All Schools
Instruction						
Media Center and Classroom Audio-Visual Materials	27.70%	9.5%	31%	11.25%	25%	26.28%
Library Books and Magazine and Periodical Subscriptions	4.17%	0	10.88%	3.75%	0	5.2%
Physical Education Equipment Music and Musical Instruments Athletic Equipment	33.18%	2.5%	25.56%	36.87%	0	30.40
Supplemental Classroom Materials Supplemental Classroom Equipment	26.95%	88%	11.63%	15.25%	0	23.76%
Total-Instruction	92%	100%	78.07%	67.12%	25%	85.64%

Table 31

(continued)

Category and Item	Elementary Schools	Special Education Centers	Junior High Schools	Senior High Schools	Adult Vocational Technical Schools	All Schools
Support						
Construction of and Renovation of Student Related Facilities	.16%	0	11.75%	3.63%	0	2.66%
Improvement of Outdoor Physical Education and Athletic Areas	1.77%	0	4.31%	12.5%	50%	4.36%
Purchase of Student Furniture	6.07%	0	5.87%	16.75%	25%	7.34%
Total-Support	8%	0	21.93%	32.88%	75%	14.36%

CHAPTER V

DISCUSSION OF THE RESULTS OF THE IMPLEMENTATION OF THE ENERGY CONSERVATION MONETARY INCENTIVE PROGRAM

There were two major focuses in the study of the implementation of the Orange County, Florida, Public School System's Energy Conservation Monetary Incentive Program: (a) the impact of the program upon dollar costs and the consumption of electric energy as measured in KWH, and (b) the impact of the receipt of monetary incentive awards upon individual schools and all schools combined, and the manner in which the awards were allocated by local school personnel. Accordingly, this chapter contains a discussion of the results of the study relative to dollar costs and electric energy consumption data, and the manner in which local school personnel allocated the individual school's share (50%) of the monetary incentive awards generated through the application of the formula described in Chapter III.

Discussion of the Impact of the Energy Conservation Program Upon Dollar Costs and Electric Energy Consumption

A review of Table 6 shows that four of the five categories of schools, and all schools combined experienced a decrease in dollars expended for electric energy when the costs for 1977-78 were compared to those for 1979-80. Further, presented in Table 18 is information which indicates that for all five categories of schools and for all schools combined there was a decrease in electric energy consumption when the consumption for 1977-78 was compared to that of 1979-80. Among the five categories, and among individual schools within each category, there were different amounts of decreases and increases in both dollar costs and electric energy (KWH) consumption. Several factors could have accounted for these differences, and the following discussion centers upon some of those factors.

As evidenced by a comparison of Tables 1-5, which show the information relative to dollar costs, with Tables 13-17, which show the information relative to KWH consumption, there were individual schools which experienced a reduction in KWH consumption while experiencing an increase in dollar costs. For instance, within the elementary school category, comparing Table 1 with Table 13, 10 schools experienced an increase in dollar costs while simultaneously experiencing a decrease in KWH consumption. Within the junior high school category, a comparison of Table 3 with Table 15 shows that 4 schools experienced an increase in dollar costs while experiencing a decrease in KWH consumption. This pattern did not follow within the special education center and senior high school categories. However, comparing Table 5 and Table 15, it can be seen that all four adult vocational-technical schools experienced an increase in dollar costs while two schools had a decrease in KWH consumption.

One plausible explanation of the fact that an individual school could experience an increase in dollar costs and a simultaneous decrease in KWH consumption is that there was a difference in the cost of electric energy between the two electric power companies which served the Orange County, Florida, Public School System. Within the elementary school category there were 12 schools which experienced the phenomenon previously described. Of the 12 schools, 10 were served by the Florida Power Corporation and 2 by the Orlando Utilities Commission. The same situation existed for both the junior high school and adult vocational-technical categories where four schools of four schools, and two schools of two schools respectively, were served by the Florida Power Corporation. Given the knowledge of the researcher that the Florida Power Corporation charged a higher fuel adjustment charge than the Orlando Utilities Commission, the fact that a school experienced an increase in dollar costs while experiencing a decrease in KWH consumption could be directly attributed to the higher charge for electric energy by the Florida Power Corporation.

The type of physical facility in which an individual school was housed could have been a factor in explaining why some schools did not do as well as others in the saving of dollar costs and KWH consumption. From the point of view of the researcher who had knowledge of the physical characteristics of the schools studied, it seemed likely that there were circumstances under which characteristics and design of a facility impacted dollar costs and KWH consumption and the potential for a savings. This notion is supported by a Tenneco, Inc. (1978) report which contained a statement identifying school facility design as one of the most common factors contributing to the waste of electric energy in the public schools of the United States. Page (1974) further supported the idea when he wrote that the total re-design of a school facility was a viable means of reducing the waste of electric energy in school facilities. An example which supports the researcher's contention can be found from a review of

Table 13 which indicates that 13 of 21 elementary schools which experienced a decrease in KWH consumption in excess of 50,000 KWH were of a unique type. All were "finger type" schools which had been constructed during the 1950's without air conditioning. Subsequently, they had been air conditioned with individual room units with individual room controls. The other eight schools had central air conditioning units. Similar situations existed within the junior high school category where two of the schools which experienced large decreases in KWH consumption were schools of 1920's vintage with individual room air conditioning units, and the senior high school category where the second and third greatest decreases in KWH consumption (Table 16) took place in "finger type" schools which had been constructed in the 1950's and which were air conditioned with individual room units. These examples seem to indicate that, either through the efficiency of the air conditioning units, and/or the manual operation through individual room control, the type of air conditioning unit and/or facility impacted electric energy consumption. Thus, it is plausible that within the Orange County, Florida, Public School System the "finger type" schools with individual room air conditioning units have been more efficient that the compact single or multi-story facilities with central air conditioning units. However, consideration must be given to the statements of Neill (1977), Savage (1976), and Stephan (1977) to the effect that inefficient mechanical and electrical systems and building design deficiencies could have caused the facilities studied to be more susceptible to the savings of electric energy through the implementation of a formal conservation program.

The researcher, based upon intimate knowledge of the system's facilities, also offers the possibility that "open" or flexible space schools have the potential to become more energy efficient than schools which were designed in a more conventional manner. Of the elementary schools which experienced the greatest decrease in KWH consumption (Table 13), three of the four open space elementary schools in the system ranked first, second, and third among the elementary schools with the greatest amount of decrease in KWH consumption. The two flexible space junior high schools in the system ranked first and second among the junior high schools (Table 15) in the greatest amount of decrease in the junior high school category, and one of the two flexible space high schools ranked second among the senior high schools (Table 16) in the amount of decrease in KWH consumption. One other plausible explanation which could be combined with the physical feature of "openness" and flexibility is that the six schools cited were among the last 10 constructed in the school system. The date of construction could have resulted in the existence of a more efficient electrical and mechanical system due to the emerging improvements in technology and design, and thus there could have been a greater potential for savings as local school personnel and district support personnel became more adept in operational techniques. Further, another situation which could be presented as evidence that facility design could have impacted the potential for savings was the fact that Meadowbrook, Conway, and Walker Junior High Schools which were constructed from identical architectural plans ranked third, fourth, and fifth in the amount of decrease in KWH consumption at the junior high school level.

Other factors were explored as the basis for a plausible explanation of differences in KWH consumption. The size of a school, either in the number of square feet encompassed within the building or the size of student population, did not appear to impact the amount of decrease in KWH consumption within the five school categories. Using the data available in Tables 13-17 the researcher compared the percentages of decrease within the various school categories. Specifically, based upon an intimate knowledge of the various school facilities and assigned student populations, schools were placed into student population groups within each category. For example, through the use of the data available in Table 13, it was calculated that the percentage of decrease in KWH consumption for five small elementary schools was 4%, 5.7%, 11%, 15.4%, and 16.2% respectively; for five middle sized elementary schools, 1%, 4.2%, 10.9%, 11.1%, and 14.2% respectively; and, for five large elementary schools, 4%, 6.8%, 11.2%, 13.9%, and 19.7% respectively. Using the data from Table 15, the percentages of decrease in KWH consumption for selected senior high schools were calculated as follows: for two small schools, 12.5% and 14.2%; for two middle-sized schools, 16.2% and 18.7%, and for two large schools, 9.0% and 20%. The proposition that school size is not a plausible explanation for the differences in the amount of decrease in KWH consumption is based upon the above comparisons which show wide variations within each group as well as the similarity of variations among categories.

It is evident, from a review of the data contained in Tables 13-17, that there was a significant increase in the amount of electric energy consumed when schools in one category were compared with schools in another and student population was held "constant." Examples which support this contention are the comparison of Engelwood Elementary School (student population 926, 1979-80 KWH consumption, 248,984), Lockhart Junior High School (student population 872, 1979-80 KWH consumption, 435,400), and Jones High School (student population 855, 1979-80 KWH consumption, 689,039). Instructional programmatic considerations appear to have been a significant factor influencing the amount of electric energy consumed among the various categories of schools. Secondary school instructional programs such as industrial arts, home economics, agriculture, business machines, and interscholastic athletics all contributed to a high rate of electric energy consumption. Further, it appears that the senior high school programs had a greater impact than those offered at the junior high school level.

Considering the impact of programmatic differences upon KWH consumption among categories of schools, one could then pose a question as to what extent programmatic considerations within a school category could have impacted KWH consumption and the potential for savings. Given the knowledge of the researcher relative to instructional program offerings and the size of student population at each school, a per student decrease was calculated for each of the eight senior high schools which experienced a decrease in KWH consumption (Table 16). The per student decrease was calculated through the use of the 1979-80 enrollment figures from Appendix K. The per student decreases ranged from $43.24 at Colonial High School to $250.00 at West Orange High School. With the exception of Colonial High School, which had 40 classrooms in relocatable facilities, the greatest per student decreases took place at those schools which had the most diverse instructional programs including a large number of industrial, home economics, and business education programs. Thus, it appears that, at least at the senior high school level, differences in instructional programs could have impacted the potential for decreasing KWH consumption.

One of the other factors which could have impacted KWH consumption and the ensuing increases or decreases was a variation in weather conditions as measured in units of temperature. Table 24 provides information relative to the monthly electric energy consumption for all schools combined from 9/1/77-5/31/78 and 9/1/79-5/31/80. Three months (September, October, and April) were selected from Table 24 for the purpose of attempting to determine if variations in temperature could have impacted the decrease in KWH consumption. Information relative to variations in temperature was obtained from the United States National Weather Service, Orlando, Florida. This information was provided in degree days and when the degree days were converted to units of temperature measured in degrees Fahrenheit the following daily average temperatures for each selected month resulted: September 1977, 82.9°, September 1979, 81.6°; January 1978, 50.8°, January 1980, 57.6°; April 1978, 71°, and April 1980, 73.7°. As shown in Table 24 a comparison of September, 1977, with September, 1979, revealed that there was a decrease of 1,148,308 KWH. It was concluded that this was far in excess of any decrease which could have resulted from a drop of 1.3° in average daily temperature. When January of 1978 was compared with January of 1980 there was a decrease of 1,289,673 KWH. The average daily temperature increased 6.8° which would seem significant. However, the researcher was aware of the fact that most of the schools of the system were heated through the use of fuel oil or natural gas and not electric energy. Thus, from the point of view of the researcher, the 6.8° increase in temperature did not have a significant impact upon the decrease in KWH consumption. The increase in average daily temperature between April, 1978, and April, 1980, of 2.8° and a corresponding decrease of 1,308,260 KWH presented a most interesting situation, for as the outside temperature increases one could conclude that if outside temperature was the only factor, KWH consumption would also increase. Thus, factors other than outside temperature must have impacted the decrease in KWH consumption. Based upon the foregoing, it is believed that variations in average daily temperatures had no significant impact upon the consumption of KWH while the Energy Conservation Monetary Incentive Program was being instituted.

Of the factors which could have influenced the dollar costs and KWH consumption, the impact that people could have had has not yet been addressed. Specifically, was it plausible to suggest that the length of service at a particular school, commitment to trying to institute programs initiated at the district, level, and initiative of local school administrators impacted KWH consumption? Based upon the researcher's intimate knowledge of the service record of local school administrators, their history of commitment, and initiative, Tables 13-17 were studied in an attempt to determine if these factors could have impacted the amount of change in KWH consumption. As reported in Table 13, six elementary schools experienced an increase of less than 10,000 KWH and seven schools experienced a decrease of less than 10,000 KWH. Also reported was the fact that 21 schools had experienced a decrease in KWH consumption in excess of 50,000 KWH. It was found that of the 13 elementary schools which experienced either an increase or a decrease of less than 10,000 KWH in electric energy consumption, seven had experienced a change in principals between 1977-78 and 1979-80. However, of the 21 elementary schools which experienced a decrease in KWH consumption of more than 50,000 KWH, eight had experienced a similar change in principals. There appeared to be no indication that length of service at a particular school attributed to the amount of decrease in KWH consumption.

A different opinion was formed when the commitment and initiative of the principals were considered. Among the principals of the 13 elementary schools which experienced either an increase, or a decrease of less than 10,000 KWH in electric energy consumption, four principals had a history of lack of commitment to programs introduced at the district level, and five principals had a history of being passive when confronted with an opportunity to develop a cooperative venture involving teachers, students, and support groups. Of the 21 principals who were the managers of the elementary schools which experienced a decrease in KWH consumption greater than 50,000 KWH, 19 (90.5%) had a history of making strong commitments to programs introduced at the district level and a record of success in developing staff and student support for such programs as well as those initiated at the local school level. Thus, at least at the elementary school level, the commitment and initiative of the local school administrators appeared to have influenced the amount of decrease in KWH consumption. This opinion is supported by Bickle and Emry (1979) who emphasized the importance of school district personnel making a firm commitment to the development and implementation of energy conservation/ management programs.

An additional question that could be raised relative to the impact that people and their attitudes had upon the program. Based on conversations with teachers, students, and support personnel, it seemed that during the first year of program implementation the many individuals became intrigued by the challenges offered. The enthusiasm of the students and the positive steps taken by support personnel such as custodians, food service personnel, and district-level maintenance support personnel were in evidence throughout the conversations relative to the program. There were, however, negative comments relative to personal comfort levels, the "uselessness" of the endeavor in light of the worldwide situation, the fact that an energy crisis did not exist, and the bother of implementing activities which were planned at the local school level. Certain of the negative comments were similar to those stated by Neill (1977). Given the experience of the researcher, it is believed that positive attitudes toward the program did exist and where these attitudes seemed to exist most frequently the greatest amount of decrease in KWH consumption took place. This conviction is consistent with the belief of Jones and Alubicki (1979) who stressed the importance of team work, innovation, thrift, and resourcefulness in energy conservation programs.

As a result of a review of the data contained in Tables 6 and 18, a concern developed relative to the fact the the savings in KWH as shown in Table 18 (7,774,693 KWH) appeared to be out of line with the savings in dollar costs as reported in Table 6 ($200,128). This concern resulted from the researcher's awareness that the average cost per KWH (4.5¢) for 1979-80 was very close to the average cost per KWH for 1977-78. Multiplication of the savings of 7,774,693 KWH by the approximate average cost per KWH (4.5¢) indicated a dollar cost savings of $349,861.18; this figure exceeded the actual dollar cost savings by $149,733.18. Based upon a subsequent review of the billings for electric energy for the time period studied, it became apparent that such a mathematical comparison was not valid; the average cost per KWH did not include the cost of the fuel adjustments which had been applied to the billings by the electric power companies. The dollar cost comparisons as reported in Table 6 included both the cost per KWH and the fuel adjustment cost which offers a plausible explanation of the reason why one cannot simply multiply the KWH saved by the average cost per KWH and arrive at the dollar cost savings between 1977-78 and 1979-80.

As reported in Table 30, the amount of the monetary incentives which were generated during the first year of the program was $388,194.45. Based upon the allocation formula described in Chapter III, $194.097.22 (50%) was returned to the local schools for allocation, $77,638.89 (20%) was added as a supplement to the energy management section's budget, and $116,458.33 (30%) was reflected as a direct savings in the utilities account of the district. Stated another way, dollars in the form of incentive awards in the amount of $388,194.45 remained within the school system rather than having been paid to the utilities companies if the 7,774,693 KWH (Table 18) had not been saved. As was previously reported, the savings in KWH consumption as shown in Table 18 appeared initially to be out of line with the savings in dollar costs as shown in Table 6. This same thought could arise from a study of Table 30 where it is shown that the implementation of the incentive program resulted in a net dollar increase of $188,066.45 between 1977-78 and 1979-80. This fact can also be explained by the changes in fuel adjustment charges coupled with the application of the factors included in the incentive award formula (see Appendix K). The main point of the discussion, however, is that the net dollar increase was not paid to the utilities companies but remained within the school system, and that there was a significant contribution to the saving of electric energy in the amount of 7,774,693 KWH.

The savings of 7,774,693 KWH amounted to a savings of 13.7% for all schools combined. While not as large as the one-third reduction estimated to be possible in a school district by Tenneco, Inc. (1978), nor the 50% direct reduction which was estimated to be possible by Stephan (1977), the savings realized in the Orange County, Florida, Public School System did complement the position of Professor Charles Moore who was cited by LeBlanc (1978) as having written that saving energy is one of the most important human acts. The savings of KWH consumption found as a part of the present study appeared to reflect an awareness on the part of the people involved in the program that the humanistic considerations which surrounded the potential depletion of finite energy supplies were as important as a plan of action based solely upon financial projections. It is further believed that it was through the efforts of the people who had been involved in the program that the KWH consumption of electric energy was decreased by

7,774,693 KWH. Given the knowledge of the researcher that there had been no major effort in the Orange County, Florida, Public School System between 1977-78 and 1979-80 to rectify building deficiencies which could have influenced greatly the consumption of electric energy, the efforts of the people involved to institute more prudent operational practices, such as those suggested by Educational Facilities Laboratories (1973), and the curtailment or reduction of the amount of electric energy used remain the most plausible factors to account for the overall reduction. This conviction is supported by Stephan (1977) when he postulated that curtailment is one of the most expeditious and effective means of effectuating a savings in electric energy consumption.

Contained in Tables 25-29 is information relative to the amount of the incentive award generated by each individual school. The same percentages as were applied to Table 30 (50% to the local schools, 10% to the energy management section, and 30% to the district's utility account) can be applied to the second column of Tables 25-29. When one reviews Tables 25-29 the question as to how a school could have an increased dollar cost and still generate an incentive award could arise. A review of Tables 25-29 will show that 18 schools (12 elementary schools, 4 junior high schools, and 2 adult vocational-technical schools) experienced an increase in dollar costs between 1977-78 and 1979-80, while also generating an incentive award. Of the 18 schools, where this situation occurred, 16 were served by the Florida Power Corporation. Thus, the fact that the fuel adjustment charge was greater at the schools served by the Florida Power Corporation than those served by the Orlando Utilities Commission appears to have reduced the potential for such schools to experience a decrease in dollar costs. This same situation existed when a school with a small decrease in dollar costs was analyzed. For instance, Winegard Elementary School, which was served by the Florida Power Corporation, had a decrease in dollar costs of $8 between 1977-78 and 1979-80 but generated the largest incentive among the elementary schools, $10,024.97 (Table 25). A detailed review was conducted of the Florida Power Corporation billings for Winegard Elementary School and it was determined that the fuel adjustment charge and a delay in billing cycle for the charges had significantly impacted the decrease in dollar costs. The other two schools which experienced an increase in dollar costs while generating incentive awards were served by the Orlando Utilities Commission. A review of the application of the incentive award formula indicated that the two schools (Lake Silver and Princeton Elementary Schools) had an enrollment adjustment factor of 1.12 and 1.13 respectively (see Appendix K). This enrollment adjustment factor appears to account for these two cases.

The decrease in KWH consumption of 13.7% which was experienced in the Orange County, Florida, Public School System during the first year of implementation of the Energy Conservation Monetary Incentive Program appears to be comparable to those decreases which were experienced in other school districts which had instituted similar programs. In a comparison of the first year of implementation of its program, FY 1977-78 compared to FY 1978-79, Hillsborough County (Note 4) reported a decrease of 10.88% in KWH consumption. According to information provided by Reason (Note 7) the City School District of Rochester, New York, experienced a 12.62% reduction during the first year of an incentive program, 1972-73 compared to 1973-74. Similar reports were published by Lee County (1978), Palm Beach County (1977), and the Houston Independent School District (1979).

An effort was made to compare the equity of the awards formula which was developed for the Orange County, Florida, Public School System with those reported by Artus (Note 3), Hillsborough County (Note 4), Houston Independent School District (Note 5), and Reason (Note 7). The wide variation in the factors which were included in the various formulas involving degree days, number of days in billing cycle, square footage changes, student population changes, cost avoidance calculations, budgeted versus projected cost savings, and hours of operation resulted in an array of formulas which had little commonality. However, from the point of view of the researcher, based upon a review of the monetary incentives allocated in other school districts, the incentive award formula developed for Orange County, Florida, appears to have resulted in the generation of comparable incentive awards for comparable decreases in KWH consumption.

Discussion of the Impact of the Receipt of Monetary Incentive Awards and the Manner in Which the Awards Were Allocated by Local School Personnel

As was cited previously, the individual schools were allocated $194,097.22 which represented 50% of the total incentive awards generated through the implementation of the Energy Conservation Monetary Incentive Program formula. Of this amount, 57 elementary schools received a total of $68,468.86, 2 special education centers received a total of $6,399.48, 16 junior high schools received a total of $66,514.41, 8 senior high schools received a total of $50,259.13, and 2 adult vocational-technical schools received a total of $2,455.34. Reported in

Table 31 is the percentage distribution of the manner in which the incentive awards were allocated by local school personnel for each of the five categories of schools and for all schools combined. The information reported in Table 31 is supported by more detailed information contained in Appendix M. An effort was made to develop some explanation for the fact that within four of the five categories of schools and for all schools combined the major portion of the incentive award was allocated to the items within the instructional category. The following possibilities are based on the researcher's intimate knowledge of the facilities, financial status, and personnel of the school system and extensive conversations held with local school administrators relative to the deliberations which resulted in the reported allocations.

One plausible explanation for the preponderance of allocations to the instructional category is that the majority of the persons selected for the local schools incentive allocation committees were instructional personnel. A review of the checklists which were submitted by the local school principals revealed that in most schools, instructional personnel (classroom teachers, support teachers, and curriculum resource teachers) comprised the majority of the membership of the committees. The composition of the committees, coupled with the emphasis that had been placed by the district superintendent upon the role of instruction as the major mission of the school system, could have been a major influence. In addition, the school principal was given complete autonomy to appoint the local incentive allocation committee members. It is possible that the local school principals, by design, could have influenced the allocation of incentive award funds through the selection of instructional personnel or other committee members who were in support of specific projects or programs.

The number of members on a committee was also examined as a potential factor which could have impacted the decisions made. Of the 85 committees which existed, 72 had a membership of 5-10 members, and within that narrow range there was no apparent pattern of relationship with the allocations.

As a result of the discussions with local school principals and selected incentive award committee members, it appears that another explanation of the committees' decisions was the mandate that the funds received had to be earmarked for projects which would be of direct benefit to the students. Those with whom the researcher held discussions thought it was easier for the committee members to show direct student benefit from those items within the instructional category than those within the support catetory. Another factor which was cited during these discussions was that a greater number of students could receive potential benefit from a single instructional project than from a single support project.

One additional factor which probably contributed to the decisions made at the local school level relates to a local school's budgetary limitations and the problems created by the inflationary spiral. Since the individual schools had not received an increase in the basic district budget allocation for the two years prior to FY 1979-80, it would seem that the incentive award funds provided one avenue to assist in offsetting the impact of inflation, especially inflation that impacted the cost of items within the instructional category. Further, as previously discussed, since instruction had been emphasized as the primary mission of the school system it would seem logical that the instructional rather than support needs would be met first.

Within the instructional category, certain generalizations may be made about the items needed. From a study of the data presented in Table 31, it can be seen that (1) there was apparently no school category within which the need for library books and magazine and periodical subscriptions was a high priority; (2) with the exception of the special education center and adult vocational-technical school categories the schools within the other categories had a need to supplement the regular school budget funds to purchase physical education equipment, music and musical instruments, and athletic equipment; (3) the need for supplemental media center and classroom audio-visual materials was greatest within the elementary, junior high, and adult vocational-technical school categories; and (4) the special education centers had a greater need for supplemental classroom materials and supplemental classroom equipment. Based upon the knowledge of the researcher, there appears to be logical explanations for each generalization. Specifically, (1) there had been for a number of years budgetary allocations for books and periodicals which had been based upon established formulas; (2) there were no formal physical education, music, or athletic programs at the special education centers or adult vocational-technical schools; (3) the special education centers did not have formal media center programs and the needs of the high schools had been met due to mandated requirements related to accreditation; and (4) the nature of special education programs required highly specialized and sophisticated materials and equipment.

When the support categories and items as reported in Table 31 and Appendix M were reviewed it became apparent that there had been a major emphasis placed upon the improvement of outdoor areas and the purchase of student furniture at 10 schools. The researcher was aware of site and furniture needs which had been previously identified by leadership personnel assigned to those schools; thus, it is probable that, in the absence of other sources of funding to meet these needs, the principal had been successful in influencing the committee members to allocate the incentive funds to these areas.

A final observation is that in general, the local school principals and incentive award committee members with whom the program was discussed were enthusiastic and complementary relative to the first year's implementation. Many stated that, in their opinion, the incentive program had created an incentive to save electric energy; provided an excellent opportunity to supplement the local school's budget; and provided an opportunity for individual school managers, teachers, students, and support personnel to develop a feeling of pride and ownership in a worthwhile endeavor.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

The major focus of the study was (a) to develop an electric energy conservation monetary incentive program (ECMIP) and (b) to determine the impact the program had upon the gross amount of dollars expended for electric energy and the gross consumption of electric energy in the Orange County, Florida, Public School System when information for nine months of a base year (FY 1977-78) was compared with information for a similar time period for a current year (FY 1979-80). Further, an additional focus of the study was a determination of the manner in which the monetary incentive awards received at the local school level were allocated by local school personnel to selected categories and items of expenditures. Four questions provided direction for the collection and analysis of the data. Three questions involved comparisons of data collected from 9/1/79 through 5/31/80 with that collected from 9/1/77 through 5/31/78 related to monthly and total dollar costs of electric energy, monthly and total amounts of electric energy consumption, and monthly and total dollar costs of electric energy adjusted by the cost of funding the monetary incentive program. The fourth question related to the manner in which the dollars received at the local school level as incentive awards were allocated by local school personnel to selected categories and items. The categories of schools used in the data analysis related to the four questions were elementary schools, special education centers, junior high schools, senior high schools, adult vocational-technical schools, and all schools combined.

In order to conduct the study, billings for electric energy from 9/1/77 through 5/31/78 and from 9/1/79 through 5/31/80 were reviewed to obtain information relative to month-to-month electric energy usage and the related costs for each school separately, for the district total categorized into the five groupings previously cited, and for all schools combined. The amounts of electric energy consumed and the dollar costs for each month, 9/1/77 through 5/31/78, were subtracted from the amounts consumed and the dollar costs, 9/1/79 through 5/31/80, to determine the gross increase or decrease in consumption and dollar costs on both a monthly and total basis. In addition, the amount of monetary incentive awards generated were calculated, 50% were allocated to the individual schools consistent with the formula, and the amounts generated were utilized to adjust the gross increase or decrease in dollar costs as had been previously determined. To ascertain the manner in which local school personnel allocated the monetary incentive award funds received by the individual schools, a checklist was completed by the principal of each school center. The checklists were analyzed to determine the relative proportion of the total dollars received which had been allocated to the instructional and support categories and the items listed within each. Ninety-eight of the 106 school centers of the Orange County, Florida, Public School System were included in the study.

Based upon the analysis of the data, the following major findings emerged:

1. Relative to the total dollar costs expended for electric energy when the costs from 9/1/77 through 5/31/78 were compared to the costs from 9/1/78 through 5/31/80, it was determined that 68 of the 98 schools studied, four of the five categories of schools (elementary schools, special education centers, junior high schools, and senior high schools), and all schools combined experienced a decrease in dollar costs which totaled $200,128. Further exploration of this finding revealed the following: (a) there was no savings in dollar costs within the adult vocational-technical school category; (b) the senior high school category had the largest decrease in dollar costs, and both the junior and senior high school categories experienced larger decreases than the elementary school or special education center categories; (c) the largest individual school decreases were within the junior and senior high school categories; and (d) the special education center category had the greatest average decrease in dollar costs per school followed by the senior high, junior high, and elementary school categories respectively.
2. In regard to monthly dollar costs for electric energy for all schools combined, when the costs from 9/1/77 through 5/31/78 were compared with those from 9/1/79 through 5/31/80, eight of the nine months studied (September, November, December, January, February, March, April, and May) showed a decrease in dollar costs. Other findings related to monthly dollar costs included the following:

(a) for each of the categories of schools, and for all schools combined, the month of October showed an increase in dollar costs; (b) for each category of schools, other than the adult vocational-technical schools and all schools combined, there was a larger decrease in costs on a per month basis during the last five months of the study than during the first four months; (c) the month of December was the only month for which there was a decrease within all five categories of schools and for all schools combined; and (d) for four of the five categories of schools (elementary schools, special education centers, junior high schools, and senior high schools) and for all schools combined, there were decreases in monthly dollar costs in the months of December, January, February, April, and May.

3. Relative to the total energy consumption, when the consumption from 9/1/77 through 5/31/78 was compared with the consumption from 9/1/79 through 5/31/80, it was determined that 85 of the 98 schools studied, each of the five categories of schools studied, and all schools combined experienced decreases in electric energy consumption which totaled 7,774,693 KWH. Further exploration of this finding revealed that (a) the elementary school category had the greatest decrease in consumption, and both the elementary and junior high school categories experienced larger total decreases than any of the other three categories; (b) the largest individual school decreases were within the junior and senior high school categories; and (c) the special

education center category had the greatest average decrease per school followed by the junior high school, elementary school, senior high school, and adult vocational-technical school categories respectively.

4. In regard to monthly electric energy consumption for all schools combined, when the amounts of consumption from 9/1/77 through 5/31/78 were compared with those from 9/1/79 through 5/31/80, eight of the nine months studied (September, November, December, January, February, March, April and May) showed a decrease in the consumption of electric energy. Other findings which emerged from further analysis were that (a) for each of the categories of schools and for all schools combined, the months of September, December, January, February, March, April, and May, showed a decrease in KWH consumption; (b) for each category of schools and for all schools combined there was a larger decrease on a per month basis during the last five months of the study than during the first four months; and (c) for the elementary, senior high, and adult vocational-technical school categories and for all schools combined the month of October showed an increase in consumption.

5. Of the total of 98 schools studied, 85 (86.7%) generated a monetary incentive award. Additional findings related to monetary incentive awards were as follows: (a) incentive awards were generated within all five of the categories studied; (b) the elementary school category generated the largest total amount of incentive awards, and the elementary

and junior high school categories generated larger total amounts of incentive awards than any of the other three categories; (c) the largest individual school incentive awards were generated within the junior and senior high school categories; and (d) the senior high school category generated the largest average incentive award per school followed by the junior high schools, special education centers, elementary schools and adult vocational-technical schools.

6. When the cost of funding the monetary incentive program was subtracted from the gross difference in dollar costs between 1977-78 and 1979-80, the net difference in dollar costs between 1977-78 and 1979-80 for all five categories of schools and for all schools combined was a net increase of $188,066.45. Further exploration of this finding revealed that (a) the senior high and adult vocational-technical school categories had the smallest increases; (b) the elementary and junior high school categories had the largest net increases; and (c) the junior high schools had the largest average net increase per school followed by the adult vocational-technical schools, elementary schools, senior high schools, and special education centers.
7. Of the $194,097.22, representing 50% of the total generated, returned to the local schools' budgets as monetary incentive awards, the major portion (85.64%) was allocated to items within the instructional category. Other findings related to the allocation of monetary incentive awards by local school

personnel were that (a) of the 85 schools which received a monetary incentive award, 79 (93%) allocated some portion of the award to items within the instructional category, (b) the adult vocational-technical school category was the only category where less than 50% of the monetary incentive award funds received were allocated to the instructional category, (c) only 11 of the 85 schools allocated more than 50% of the monetary incentive award funds received to the support category. Library books and magazines and periodical subscriptions within the instructional category and construction and renovation of student related facilities within the support category, were allocated the smallest percentage of energy incentive award funds, while the other items within each category received closely proportioned shares.

Conclusions

As indicated previously, the major purpose of this study was to develop and determine the impact that an electric energy conservation monetary incentive program (ECMIP) had upon the gross amount of dollars expended for electric energy and the gross consumption of electric energy in the Orange County, Florida, Public School System. Additionally, how the monetary incentive award funds received at the local school level were allocated to selected categories of expenditures was determined. Based on the the analysis of the data collected and findings which emerged, the following conclusions appeared justified.

1. It is possible for school district personnel with a variety of organizational responsibilities to develop cooperatively and implement an electric energy monetary incentive program. This conclusion is based upon the fact that such a program was developed and implemented in the Orange County, Florida, Public School System.
2. It is possible to develop a viable and equitable formula for allocating monetary incentive awards to local schools with a minimal number of components in the formula. This conclusion is justified in that the monetary incentive award formula, developed as a part of this study, contains six basic components. Utilizing the formula, incentive awards in the amount of $388,194.45 were generated. Fifty percent of this amount was returned to the local schools for their allocation, 20% was added to the school district's energy management section's budget, and 30% was reflected as a direct savings to the utility account of the district. Furthermore, schools within all categories studied, regardless of school size or number of schools within a category, generated incentive awards. Specifically, 85 of 98 schools studied generated incentive awards, and these schools represented all of the categories studied. Given the foregoing, it seems logical to conclude that the formula utilized was viable and equitable.
3. There was a gross dollar savings in all categories of schools, except the adult vocational-technical schools category, regardless of school size or number of schools within a

category. The basis for this conclusion lies within the fact that there was a total gross dollar decrease of $200,128. The total decrease resulted from a decrease at the elementary school level ($46,689), the special education center level ($11,266), the junior high school level ($49,809), and the senior high school level ($98,464), and an increase at the adult vocational-technical school level ($6,100).

4. In regard to the consumption of electric energy, there was a decrease in all categories of schools regardless of size of school or number of schools within a category. This conclusion is supported by the fact that there was a total decrease in electric energy consumption of 7,774,693 KWH. This included a decrease in consumption at the elementary school level (2,949,817 KWH), the special education center level (330,699 KWH), the junior high school level (2,794,617 KWH), the senior high school level (1,670,953), and the adult vocational-technical school level (28,607).

5. There was a greater gross dollar savings and a greater decrease in the consumption of electric energy during the mid-winter and spring months than during the fall and early winter months. The justification for this conclusion is based upon the fact that there was no decrease for the month of October for each of the categories of schools and for all schools combined, and the average dollar decrease and average decrease in electric energy consumption per month was greatest during the months of December through May.

6. When the dollars required for funding the monetary incentive award were considered, the implementation of the program resulted in an increase in total dollar costs. Justification for this generalization is that the gross dollar cost difference between 1977-78 and 1979-80 was $200,128 and the cost of funding the monetary incentive program was $388,194.45; thus, there was an overall increase in dollar costs of $188,066.45.
7. The major use of the incentive award allocations to local schools was to meet instructional needs. This conclusion is supported by the fact that 85.64% of the funds received were allocated to the instructional category.
8. Even though there was an increase in overall dollar costs resulting from the implementation of the electric energy monetary incentive program, the implementation of the program within the Orange County, Florida, Public School System was a success. Justification for this conclusion is based upon the fact that there was a reduction in the consumption of electric energy, for comparable periods, between 1977-78 and 1979-80 of 7,774,693 KWH. Furthermore, there was a gross dollar savings of $200,128. Therefore, this meant that this amount of money was available to be utilized within the school district and it was not necesary to transfer these funds to the utility companies to pay for increased costs for electric energy. It must be remembered that in addition to the gross dollar savings of $200,128 which remained in the school district, the overall

increase in dollar costs of $188,066.45 also stayed within the school district and was not paid to utility companies.

APPENDIX A

INDIVIDUAL ELEMENTARY SCHOOL DOLLAR COSTS BY MONTH FOR ELECTRIC ENERGY 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Aloma Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,662	$ 2,228	$(434)
October	1,884	2,459	575
November	1,789	1,876	87
December	1,254	1,408	154
January	1,517	1,307	(210)
February	1,221	1,490	269
March	1,875	1,940	65
April	2,092	1,946	(146)
May	2,568	2,523	(45)
TOTAL	$16,862	$17,177	$ 315

Apopka Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,294	$ 3,423	$ 1,129
October	1,956	2,878	922
November	1,611	2,437	826
December	1,746	1,866	120
January	1,633	1,727	94
February	1,744	1,993	294
March	1,622	1,902	280
April	2,072	2,215	143
May	2,336	2,427	91
TOTAL	$17,014	$20,868	$ 3,854

Audubon Park Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,905	$ 1,951	$ 46
October	1,385	1,763	378
November	1,266	1,295	29
December	2,676	1,185	(1,491)
January	1,499	1,549	50
February	3,357	1,936	(1,421)
March	1,820	1,854	34
April	1,555	1,185	(370)
May	1,947	1,839	(108)
TOTAL	$17,410	$14,557	$(2,853)

APPENDIX A
(continued)

Azalea Park Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,294	$ 1,912	$(382)
October	1,276	1,634	358
November	1,065	1,025	(40)
December	1,073	814	(259)
January	1,222	829	(393)
February	1,315	835	(480)
March	1,164	934	(230)
April	1,306	914	(392)
May	1,997	1,563	(434)
TOTAL	$12,712	$10,460	$(2,252)

Blankner Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,684	$ 1,528	$(156)
October	843	1,184	341
November	928	848	(180)
December	804	684	(120)
January	918	949	(31)
February	968	888	(80)
March	1,030	864	(166)
April	1,196	1,019	(177)
May	1,690	1,646	(44)
TOTAL	$10,061	$ 9,610	$(451)

Bonneville Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,270	$ 2,217	$(53)
October	1,899	1,965	66
November	1,265	1,465	200
December	1,070	959	(111)
January	1,110	1,095	(15)
February	1,461	1,321	(140)
March	1,167	1,097	(70)
April	1,122	1,055	(67)
May	1,810	1,603	(207)
TOTAL	$13,174	$12,777	$(397)

APPENDIX A
(continued)

Brookshire Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,473	$ 1,700	$(773)
October	1,405	1,717	312
November	1,210	1,124	86
December	844	863	19
January	1,017	985	(32)
February	1,083	968	(115)
March	1,135	1,241	106
April	1,619	982	(637)
May	2,092	2,036	(56)
TOTAL	$12,878	$11,616	$(1,262)

Catalina Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,761	$ 1,712	$(49)
October	946	1,530	584
November	1,015	372	643
December	1,049	781	(268)
January	1,411	1,068	(343)
February	2,380	1,157	(1,223)
March	892	919	27
April	1,244	841	(403)
May	1,711	1,640	(71)
TOTAL	$12,409	$10,020	$(2,389)

Cheney Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,146	$ 1,915	$(231)
October	1,356	1,757	401
November	1,318	1,211	(107)
December	1,091	1,034	(57)
January	1,135	1,079	(56)
February	1,041	941	(100)
March	1,290	1,068	(222)
April	1,336	1,138	(198)
May	1,867	1,598	(269)
TOTAL	$12,580	$11,741	$(839)

APPENDIX A
(continued)

Chickasaw Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,515	$ 2,040	$(475)
October	1,675	1,974	299
November	1,391	1,521	130
December	1,433	1,344	(89)
January	1,337	1,131	(206)
February	1,303	1,225	(78)
March	1,450	1,660	210
April	1,535	1,389	(146)
May	2,075	1,923	(152)
TOTAL	$14,714	$14,207	$(507)

Columbia Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,532	$ 2,908	$ 376
October	2,497	2,899	402
November	2,128	2,591	463
December	1,849	1,849	-0-
January	1,491	1,404	(87)
February	1,802	1,589	(213)
March	1,692	1,683	(9)
April	3,675	2,089	(1,586)
May	2,529	2,282	(247)
TOTAL	$20,195	$19,294	$(901)

Conway Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,921	$ 2,215	$ 294
October	1,170	1,288	118
November	1,049	999	(50)
December	952	880	(72)
January	1,513	1,075	(438)
February	1,310	1,212	(98)
March	975	1,134	159
April	1,532	1,011	(521)
May	2,218	2,071	(147)
TOTAL	$12,640	$11,885	$(755)

APPENDIX A
(continued)

Cypress Park Elementary School

Month	1977-78	1979-80	Difference
September	$ 692	$ 921	$ 229
October	501	732	231
November	426	536	110
December	359	382	23
January	465	478	13
February	452	483	31
March	429	567	138
April	674	663	(11)
May	872	966	94
TOTAL	$ 4,870	$ 5,728	$ 858

Dillard Street Elementary School

Month	1977-78	1979-80	Difference
September	$ 3,498	$ 2,924	$(574)
October	2,074	3,264	1,190
November	2,049	2,081	32
December	1,675	1,664	(11)
January	2,574	1,969	(605)
February	2,299	2,105	(194)
March	2,049	2,357	308
April	2,949	2,357	(592)
May	4,224	3,422	(802)
TOTAL	$23,391	$22,143	$(1,248)

Dommerich Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,448	$ 2,613	$ 165
October	1,955	2,653	698
November	2,191	1,772	(419)
December	2,011	1,690	(321)
January	2,378	2,016	(362)
February	2,057	1,749	(308)
March	1,955	1,999	44
April	2,367	2,067	(300)
May	2,547	3,656	1,109
TOTAL	$19,909	$20,215	$ 306

APPENDIX A
(continued)

Dover Shores Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,890	$ 1,762	$(128)
October	948	1,266	318
November	1,025	951	(74)
December	1,012	804	(208)
January	1,069	985	(84)
February	1,240	995	(245)
March	1,328	1,092	(236)
April	1,450	1,476	26
May	1,962	1,720	(242)
TOTAL	$11,924	$11,051	$(873)

Dream Lake Elementary School

Month	1977-78	1979-80	Difference
September	$ 2,129	$ 2,042	$(87)
October	1,086	1,198	112
November	895	885	(10)
December	879	804	(75)
January	1,099	928	(171)
February	1,159	1,067	(92)
March	840	1,102	262
April	1,338	981	(357)
May	2,347	1,912	(435)
TOTAL	$11,772	$10,919	$(853)

Durrance Elementary School

Month	1977-78	1979-80	Difference
September	$ 1,938	$ 1,528	$(410)
October	1,559	1,354	(205)
November	1,235	1,189	(46)
December	949	865	(84)
January	899	777	(122)
February	1,072	999	(73)
March	1,140	1,077	(63)
April	1,176	1,044	(132)
May	1,879	1,921	42
TOTAL	$11,847	$10,754	$(1,093)

APPENDIX A
(continued)

Eccleston Elementary School

Month	1977-78	1979-80	Difference
September	$4,646	$2,112	$(2,534)
October	1,424	1,908	484
November	1,208	1,228	20
December	1,269	1,169	(100)
January	1,425	1,355	(70)
February	1,422	1,417	(5)
March	1,286	1,484	198
April	1,587	1,332	(255)
May	2,168	2,094	(74)
TOTAL	$16,435	$14,099	$(2,336)

Engelwood Elementary School

Month	1977-78	1979-80	Difference
September	$1,958	$1,611	$(347)
October	1,117	1,500	383
November	910	1,011	101
December	1,004	921	(83)
January	1,281	731	(550)
February	1,250	1,090	(160)
March	1,094	1,142	(48)
April	1,192	783	(409)
May	1,852	1,514	(338)
TOTAL	$11,658	$10,303	$(1,355)

Fern Creek Elementary School

Month	1977-78	1979-80	Difference
September	$2,243	$1,922	$(321)
October	1,471	1,699	228
November	1,340	1,154	(186)
December	1,153	1,032	(121)
January	1,199	869	(330)
February	1,172	1,085	(87)
March	1,091	1,199	108
April	2,834	1,058	(1,776)
May	1,815	1,628	(187)
TOTAL	$14,318	$11,646	$(2,672)

APPENDIX A
(continued)

Grand Avenue Elementary School

Month	1977-78	1979-80	Difference
September	$1,219	$1,261	$ 42
October	630	1,056	426
November	690	990	300
December	650	735	85
January	880	1,015	135
February	889	909	20
March	693	753	60
April	493	845	352
May	1,136	1,266	130
TOTAL	$7,280	$8,830	$ 1,550

Hiawassee Elementary School

Month	1977-78	1979-80	Difference
September	$2,106	$1,841	$(265)
October	1,380	1,699	319
November	1,543	1,475	(68)
December	1,400	1,158	(242)
January	1,289	1,146	(143)
February	1,383	1,312	(71)
March	1,535	1,502	(33)
April	1,544	1,347	(197)
May	2,081	1,725	(356)
TOTAL	$14,261	$13,205	$(1,056)

Hillcrest Elementary School

Month	1977-78	1979-80	Difference
September	$1,227	$ 948	$(279)
October	766	874	108
November	730	725	(5)
December	778	598	(180)
January	1,181	684	(497)
February	1,235	853	(382)
March	721	727	6
April	644	469	(175)
May	984	777	(207)
TOTAL	$8,266	$6,655	$(1,611)

APPENDIX A
(continued)

Ivey Lane Elementary School

Month	1977-78	1979-80	Difference
September	$2,096	$1,987	$(109)
October	1,211	1,799	588
November	1,292	1,515	223
December	1,220	1,298	78
January	1,272	1,507	235
February	1,376	1,444	68
March	1,294	1,491	197
April	1,381	1,463	82
May	2,513	1,509	(1,004)
TOTAL	$13,655	$14,013	$ 358

Kaley Elementary School

Month	1977-78	1979-80	Difference
September	$1,296	$1,319	$ 23
October	746	862	116
November	748	585	(163)
December	709	516	(183)
January	812	647	(165)
February	793	672	(121)
March	750	528	(222)
April	1,016	739	(277)
May	1,260	916	(344)
TOTAL	$8,130	$6,794	$(1,336)

Killarney Elementary School

Month	1977-78	1979-80	Difference
September	$1,975	$2,165	$ 190
October	1,389	1,600	211
November	999	1,209	210
December	750	853	103
January	822	867	45
February	1,072	1,163	91
March	871	1,175	304
April	925	1,009	84
May	1,434	1,518	84
TOTAL	$10,237	$11,559	$ 1,322

APPENDIX A
(continued)

Lake Como Elementary School

Month	1977-78	1979-80	Difference
September	$1,950	$1,233	$(717)
October	1,728	1,549	(179)
November	897	1,012	115
December	1,036	1,032	(4)
January	1,006	749	(257)
February	1,244	998	(246)
March	1,220	1,024	(196)
April	1,115	820	(295)
May	1,477	1,307	(170)
TOTAL	$11,673	$9,724	$(1,949)

Lake Silver Elementary School

Month	1977-78	1979-80	Difference
September	$1,676	$1,634	$(42)
October	1,210	1,394	184
November	696	943	247
December	803	773	(30)
January	404	755	351
February	877	993	116
March	789	929	140
April	932	938	6
May	1,331	955	(376)
TOTAL	$8,718	$9,314	$ 596

Lake Sybelia Elementary School

Month	1977-78	1979-80	Difference
September	$2,902	$3,151	$ 249
October	2,164	3,121	957
November	1,841	1,615	(226)
December	1,528	1,419	(109)
January	1,749	1,756	7
February	1,644	1,956	312
March	2,154	2,673	519
April	2,512	2,609	97
May	3,155	3,847	692
TOTAL	$19,649	$22,147	$ 2,498

APPENDIX A
(continued)

Lake Weston Elementary School

Month	1977-78	1979-80	Difference
September	$2,353	$1,707	$(646)
October	1,442	1,400	(42)
November	1,529	1,047	(482)
December	1,022	1,065	43
January	1,943	1,143	(800)
February	1,563	901	(662)
March	1,197	1,461	264
April	1,799	807	(992)
May	2,187	1,766	(421)
TOTAL	$15,035	$11,297	$(3,738)

Lakemont Elementary School

Month	1977-78	1979-80	Difference
September	$2,247	$2,040	$(207)
October	1,230	1,874	644
November	1,227	1,178	(49)
December	958	967	9
January	1,379	1,188	(191)
February	1,264	1,284	20
March	1,226	1,338	112
April	1,653	1,113	(540)
May	2,204	2,041	(163)
TOTAL	$13,388	$13,023	$(365)

Lancaster Elementary School

Month	1977-78	1979-80	Difference
September	$2,346	$2,462	$ 116
October	1,690	1,975	285
November	1,166	1,310	144
December	1,258	1,117	(141)
January	1,704	1,673	(31)
February	1,507	1,487	(20)
March	1,179	1,563	384
April	2,312	1,978	(334)
May	2,614	2,753	139
TOTAL	$15,776	$16,318	$ 542

APPENDIX A
(continued)

Lockhart Elementary School

Month	1977-78	1979-80	Difference
September	$1,487	$1,556	$ 69
October	1,074	1,214	140
November	744	820	76
December	595	590	(5)
January	576	495	(81)
February	657	584	(73)
March	721	764	43
April	763	705	(58)
May	1,312	1,134	(178)
TOTAL	$7,929	$7,862	$(67)

Lovell Elementary School

Month	1977-78	1979-80	Difference
September	$2,417	$ 954	$(1,463)
October	1,417	3,963	2,546
November	1,320	1,824	504
December	1,614	1,062	(552)
January	1,663	1,091	(572)
February	1,780	1,491	(289)
March	1,406	1,315	(91)
April	1,991	1,550	(441)
May	2,732	2,000	(732)
TOTAL	$16,340	$15,250	$(1,090)

Maxey Elementary School

Month	1977-78	1979-80	Difference
September	$2,473	$2,510	$ 37
October	1,724	2,143	419
November	1,743	1,594	(149)
December	1,215	2,368	1,153
January	1,331	141	(1,190)
February	1,462	1,359	(103)
March	1,517	1,695	178
April	1,620	1,497	(123)
May	2,772	2,165	(607)
TOTAL	$15,857	$15,472	$(385)

APPENDIX A
(continued)

McCoy Elementary School

Month	1977-78	1979-80	Difference
September	$2,504	$1,894	$(610)
October	2,239	2,115	(124)
November	1,546	1,982	436
December	2,518	1,496	(1,022)
January	2,312	1,344	(968)
February	2,591	1,604	(987)
March	3,051	1,634	(1,417)
April	3,100	1,720	(1,380)
May	3,307	1,892	(1,415)
TOTAL	$23,168	$15,681	$(7,487)

Oak Hill Elementary School

Month	1977-78	1979-80	Difference
September	$5,153	$5,139	$(14)
October	4,105	3,963	(142)
November	3,569	3,882	313
December	3,089	3,337	248
January	3,690	3,433	(257)
February	3,773	3,619	(154)
March	3,965	3,571	(394)
April	4,472	3,818	(654)
May	5,010	4,403	(607)
TOTAL	$36,826	$35,165	$(1,661)

Orange Center Elementary School

Month	1977-78	1979-80	Difference
September	$1,804	$2,117	$ 313
October	1,242	1,689	447
November	1,490	1,476	(14)
December	1,600	1,384	(216)
January	1,980	1,767	(213)
February	2,316	1,596	(720)
March	1,482	1,662	180
April	1,427	1,457	30
May	1,550	1,850	300
TOTAL	$14,891	$14,998	$ 107

APPENDIX A
(continued)

Orlo Vista Elementary School

Month	1977-78	1979-80	Difference
September	$2,151	$2,234	$ 83
October	1,269	1,517	248
November	1,248	1,040	(208)
December	1,150	869	(281)
January	1,098	1,097	(1)
February	1,405	1,193	(212)
March	1,156	1,453	(297)
April	1,540	1,408	(132)
May	2,333	2,018	(315)
TOTAL	$13,350	$12,829	$(521)

Palmetto Elementary School

Month	1977-78	1979-80	Difference
September	$3,654	$2,916	$(738)
October	2,396	3,021	625
November	2,974	2,902	(72)
December	4,133	2,515	(1,618)
January	4,021	3,312	(709)
February	3,874	3,213	(661)
March	3,419	2,903	(516)
April	3,404	2,892	(512)
May	4,000	3,227	(773)
TOTAL	$31,875	$26,901	$(4,974)

Pershing Elementary School

Month	1977-78	1979-80	Difference
September	$2,391	$2,899	$ 508
October	1,761	2,261	500
November	1,255	1,581	326
December	1,049	1,230	181
January	1,283	1,200	(83)
February	1,465	1,388	(77)
March	1,362	1,868	506
April	1,395	1,603	208
May	2,377	1,550	(827)
TOTAL	$14,338	$15,580	$ 1,242

APPENDIX A
(continued)

Pinar Elementary School

Month	1977-78	1979-80	Difference
September	$4,860	$5,451	$ 591
October	3,829	3,891	62
November	3,915	4,389	474
December	3,201	3,949	748
January	4,389	5,197	808
February	4,216	5,173	957
March	3,911	5,105	1,194
April	4,549	5,552	1,003
May	5,247	6,518	1,271
TOTAL	$38,117	$45,225	$ 7,108

Pine Hills Elementary School

Month	1977-78	1979-80	Difference
September	$1,018	$ 602	$(416)
October	657	1,110	453
November	747	721	(26)
December	657	607	(50)
January	974	956	(18)
February	924	535	(399)
March	809	725	(84)
April	695	613	(82)
May	939	817	(122)
TOTAL	$7,420	$6,676	$(744)

Pineloch Elementary School

Month	1977-78	1979-80	Difference
September	$2,006	$1,672	$(344)
October	795	1,192	397
November	1,038	1,017	(21)
December	994	767	(227)
January	1,238	1,048	(190)
February	1,184	1,072	(112)
March	993	1,055	62
April	1,352	818	(534)
May	1,872	1,476	(396)
TOTAL	$11,472	$10,117	$(1,355)

APPENDIX A
(continued)

Princeton Elementary School

Month	1977-78	1979-80	Difference
September	$1,319	$1,226	$(93)
October	888	1,296	408
November	805	896	91
December	922	792	(130)
January	914	665	(249)
February	898	881	(17)
March	887	945	58
April	871	864	(7)
May	1,127	1,132	5
TOTAL	$8,631	$8,697	$ 66

Ray Elementary School

Month	1977-78	1979-80	Difference
September	$2,197	$1,827	$(370)
October	1,136	1,445	309
November	1,246	993	(253)
December	855	636	(219)
January	878	671	(207)
February	913	710	(203)
March	1,043	932	(111)
April	1,204	988	(216)
May	1,986	1,627	(359)
TOTAL	$11,458	$9,829	$(1,629)

Richmond Heights Elementary School

Month	1977-78	1979-80	Difference
September	$2,077	$1,692	$(385)
October	1,175	1,751	576
November	1,378	1,246	(132)
December	1,287	1,203	(84)
January	1,242	1,123	(119)
February	1,324	1,101	(223)
March	1,249	1,226	(23)
April	1,390	1,162	(228)
May	1,911	1,449	(462)
TOTAL	$13,033	$11,953	$(1,080)

APPENDIX A
(continued)

Ridgewood Park Elementary School

Month	1977-78	1979-80	Difference
September	$2,667	$2,491	$(176)
October	2,054	2,562	508
November	1,922	729	(1,193)
December	1,478	698	(780)
January	1,532	1,394	(138)
February	1,467	1,040	(427)
March	1,808	1,688	(120)
April	2,108	1,560	(548)
May	2,528	2,662	134
TOTAL	$17,564	$14,824	$(2,740

Riverside Elementary School

Month	1977-78	1979-80	Difference
September	$2,282	$2,601	$ 319
October	2,185	2,502	317
November	1,882	1,920	38
December	1,691	1,256	(435)
January	1,301	1,004	(297)
February	1,190	999	(191)
March	1,630	1,360	(270)
April	1,961	1,756	(205)
May	2,237	2,098	(139)
TOTAL	$16,359	$15,496	$(863)

Rock Lake Elementary School

Month	1977-78	1979-80	Difference
September	$1,545	$1,558	$ 13
October	2,209	1,407	(802)
November	1,264	1,112	(152)
December	1,247	901	(346)
January	1,167	931	(236)
February	1,217	1,084	(133)
March	1,305	1,121	(184)
April	1,246	1,062	(184)
May	1,365	1,598	233
TOTAL	$12,565	$10,774	$(1,791)

APPENDIX A
(continued)

Rolling Hills Elementary School

Month	1977-78	1979-80	Difference
September	$2,487	$2,458	$(29)
October	1,683	1,776	93
November	1,282	1,307	25
December	1,083	997	(86)
January	1,828	1,116	(712)
February	2,050	1,066	(984)
March	1,377	1,771	394
April	1,544	2,213	669
May	2,309	2,152	(157)
TOTAL	$15,643	$14,856	$(787)

Sadler Elementary School

Month	1977-78	1979-80	Difference
September	$2,602	$2,313	$(289)
October	2,602	2,148	(454)
November	1,603	1,923	320
December	1,649	1,804	155
January	1,652	1,625	(27)
February	1,703	1,856	153
March	2,132	1,898	(234)
April	1,952	1,784	(168)
May	1,889	2,248	359
TOTAL	$17,784	$17,599	$(185)

Shenandoah Elementary School

Month	1977-78	1979-80	Difference
September	$2,520	$2,813	$ 293
October	2,230	2,318	88
November	1,954	2,123	169
December	1,301	1,544	243
January	1,008	1,274	266
February	1,326	1,236	(90)
March	1,782	1,778	(4)
April	1,831	1,779	(52)
May	2,871	2,532	(339)
TOTAL	$16,823	$17,397	$ 574

APPENDIX A
(continued)

Spring Lake Elementary School

Month	1977-78	1979-80	Difference
September	$2,932	$2,396	$(536)
October	1,458	1,696	238
November	1,327	1,194	(133)
December	965	1,001	36
January	1,354	1,232	(122)
February	1,233	1,168	(65)
March	1,277	1,484	207
April	2,071	1,378	(693)
May	2,930	2,094	(836)
TOTAL	$15,547	$13,643	$(1,904)

Tangelo Park Elementary School

Month	1977-78	1979-80	Difference
September	$2,442	$2,945	$ 503
October	2,195	2,230	35
November	1,577	1,664	87
December	1,268	1,114	(154)
January	1,536	1,215	(321)
February	1,862	1,442	(420)
March	1,516	1,311	(205)
April	1,595	1,603	8
May	2,203	1,479	(724)
TOTAL	$16,194	$15,003	$(1,191)

Tildenville Elementary School

Month	1977-78	1979-80	Difference
September	$1,728	$1,609	$(119)
October	1,147	1,486	339
November	1,069	1,019	(50)
December	985	873	(112)
January	673	720	47
February	968	828	(140)
March	1,050	1,199	149
April	1,086	1,366	280
May	1,610	1,903	293
TOTAL	$10,316	$11,003	$ 687

APPENDIX A
(continued)

Union Park Elementary School

Month	1977-78	1979-80	Difference
September	$3,114	$2,610	$(504)
October	1,943	1,828	(115)
November	1,665	1,118	(547)
December	1,361	1,197	(164)
January	1,715	1,442	(273)
February	1,904	1,457	(447)
March	1,320	1,479	159
April	1,845	1,293	(552)
May	2,507	2,767	260
TOTAL	$17,374	$15,191	$(2,183)

Washington Shores Elementary School

Month	1977-78	1979-80	Difference
September	$2,227	$2,024	$(203)
October	1,522	1,786	264
November	1,341	1,008	(333)
December	1,123	912	(211)
January	1,263	863	(400)
February	1,188	954	(234)
March	1,255	927	(328)
April	1,564	938	(626)
May	2,206	1,647	(559)
TOTAL	$13,689	$11,059	$(2,630)

Wheatley Elementary School

Month	1977-78	1979-80	Difference
September	$3,345	$3,801	$ 456
October	2,949	3,179	230
November	2,608	2,839	771
December	1,947	2,071	124
January	1,971	1,630	(341)
February	2,417	2,394	(23)
March	2,348	2,046	(302)
April	2,115	2,145	30
May	2,661	2,648	(13)
TOTAL	$21,821	$22,753	$ 932

APPENDIX A
(continued)

Windermere Elementary School

Month	1977-78	1979-80	Difference
September	$2,417	$2,724	$ 307
October	1,878	2,283	405
November	1,864	1,670	(194)
December	1,392	1,577	185
January	1,290	1,373	84
February	1,673	1,533	(140)
March	1,880	2,062	182
April	1,741	1,762	21
May	2,408	2,296	(112)
TOTAL	$16,543	$17,281	$ 738

Winegard Elementary School

Month	1977-78	1979-80	Difference
September	$3,810	$6,577	$ 2,767
October	4,706	5,366	660
November	4,594	5,249	655
December	3,081	2,878	(203)
January	3,875	2,812	(1,063)
February	3,940	3,091	(849)
March	4,122	3,008	(1,114)
April	4,442	4,185	(257)
May	4,936	4,332	(604)
TOTAL	$37,506	$37,498	$(8)

Zellwood Elementary School

Month	1977-78	1979-80	Difference
September	$1,887	$1,780	$(98)
October	1,356	1,453	97
November	1,208	1,010	(198)
December	1,092	1,099	7
January	1,662	987	(675)
February	2,086	1,465	(621)
March	1,359	1,401	42
April	1,291	1,105	(186)
May	1,873	1,529	(344)
TOTAL	$13,814	$11,838	$(1,976)

APPENDIX B

INDIVIDUAL SPECIAL EDUCATION CENTER DOLLAR COSTS BY MONTH FOR ELECTRIC ENERGY 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

	Forrest Park Special Education Center		
Month	1977-78	1979-80	Difference
September	$1,311	$ 943	$(368)
October	852	1,041	189
November	711	837	126
December	846	706	(140)
January	736	539	(197)
February	898	744	(154)
March	779	773	(6)
April	748	1,332	586
May	1,011	1,005	(6)
TOTAL	$7,892	$7,922	$ 30

	Gateway Special Education Center		
Month	1977-78	1979-80	Difference
September	$2,187	$1,933	$(254)
October	1,685	1,549	(136)
November	1,583	934	(649)
December	1,201	755	(446)
January	1,000	889	(111)
February	1,359	946	(413)
March	1,459	1,166	(293)
April	2,137	936	(1,201)
May	2,170	1,662	(508)
TOTAL	$14,781	$10,770	$(4,011)

	Magnolia Special Education Center		
Month	1977-78	1979-80	Difference
September	$2,492	$1,334	$(1,158)
October	2,743	3,241	498
November	2,586	2,770	184
December	2,488	2,080	(408)
January	2,203	2,016	(187)
February	3,900	2,495	(1,405)
March	5,012	2,254	(2,758)
April	3,796	2,198	(1,598)
May	3,014	2,561	(453)
TOTAL	$28,234	$20,949	$(7,285)

APPENDIX C

INDIVIDUAL JUNIOR HIGH SCHOOL DOLLAR COSTS BY MONTH FOR ELECTRIC ENERGY 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

	Apopka Junior High School		
Month	1977-78	1979-80	Difference
September	$4,724	$5,512	$ 788
October	4,783	4,997	214
November	3,317	4,295	978
December	3,081	2,920	(161)
January	3,157	2,886	(271)
February	4,042	3,800	(242)
March	4,249	3,614	(635)
April	3,542	3,445	(97)
May	4,595	3,975	(620)
TOTAL	$35,490	$35,444	$(46)

	Carver Junior High School		
Month	1977-78	1979-80	Difference
September	$3,587	$3,059	$(528)
October	2,355	3,269	914
November	2,613	2,699	86
December	2,893	2,336	(557)
January	2,780	2,605	(175)
February	2,864	2,630	(234)
March	2,500	2,867	367
April	2,919	2,590	(329)
May	3,784	3,230	(554)
TOTAL	$26,295	$25,285	$(1,010)

	Conway Junior High School		
Month	1977-78	1979-80	Difference
September	$5,808	$5,726	$(82)
October	4,794	4,384	(410)
November	4,664	3,380	(1,284)
December	3,039	2,724	(315)
January	4,034	3,062	(972)
February	4,000	3,262	(738)
March	4,171	4,368	197
April	5,488	3,982	(1,506)
May	6,313	5,200	(1,113)
TOTAL	$42,311	$36,088	$(6,223)

APPENDIX C
(continued)

Month	Glenridge Junior High School 1977-78	1979-80	Difference
September	$3,581	$3,575	$(6)
October	1,924	3,035	1,111
November	1,791	2,798	1,007
December	1,513	319	(1,194)
January	1,833	1,594	(239)
February	1,952	2,075	123
March	1,723	2,734	1,011
April	1,925	3,256	1,331
May	3,318	940	(2,378)
TOTAL	$19,560	$20,326	$ 766

Month	Howard Junior High School 1977-78	1979-80	Difference
September	$2,799	$1,995	$(804)
October	2,294	2,319	25
November	1,208	1,678	470
December	1,329	1,138	(191)
January	1,150	840	(310)
February	1,407	1,053	(354)
March	1,651	1,180	(471)
April	927	1,334	407
May	1,978	1,763	(215)
TOTAL	$14,743	$13,300	$(1,443)

Month	Jackson Junior High School 1977-78	1979-80	Difference
September	$3,240	$2,375	$(865)
October	2,126	2,503	377
November	2,165	2,181	16
December	2,342	1,852	(490)
January	2,055	1,586	(469)
February	2,142	1,921	(221)
March	2,239	1,927	(312)
April	2,046	1,914	(132)
May	2,899	2,469	(430)
TOTAL	$21,254	$18,728	$(2,526)

APPENDIX C
(continued)

Month	Lakeview Junior High School 1977-78	 1979-80	Difference
September	$3,057	$3,215	$ 158
October	2,204	2,619	415
November	1,875	1,753	(122)
December	1,505	1,609	104
January	1,737	1,603	(134)
February	1,882	1,740	(142)
March	1,992	2,351	359
April	2,135	1,897	(238)
May	3,123	2,707	(416)
TOTAL	$19,510	$19,494	$(16)

Month	Lee Junior High School 1977-78	 1979-80	Difference
September	$3,760	$3,151	$(609)
October	2,475	3,181	706
November	1,717	2,139	422
December	2,085	1,650	(435)
January	1,872	1,450	(422)
February	2,009	1,659	(350)
March	1,970	1,874	(96)
April	2,056	1,995	(61)
May	2,825	2,741	(84)
TOTAL	$20,769	$19,840	$(929)

Month	Liberty Junior High School 1977-78	 1979-80	Difference
September	$8,623	$9,637	$ 1,014
October	6,104	7,597	1,493
November	6,104	5,782	(322)
December	5,190	4,593	(597)
January	9,915	5,372	(3,823)
February	8,958	5,537	(3,421)
March	6,019	6,679	960
April	7,834	7,060	(774)
May	10,405	9,493	(912)
TOTAL	$68,432	$62,050	$(6,382)

APPENDIX C
(continued)

Month	Lockhart Junior High School 1977-78	1979-80	Difference
September	$ 649	$3,890	$ 3,241
October	2,551	2,980	429
November	2,262	1,880	(382)
December	1,700	1,440	(260)
January	2,010	1,893	(117)
February	2,173	2,230	57
March	1,990	2,601	611
April	3,556	3,182	(374)
May	3,693	3,690	(3)
TOTAL	$20,584	$23,786	$ 3,202

Month	Maitland Junior High School 1977-78	1979-80	Difference
September	$3,082	$3,673	$ 591
October	2,031	2,513	482
November	1,943	2,140	197
December	1,251	974	(277)
January	1,332	883	(449)
February	2,203	2,766	563
March	1,529	2,010	481
April	2,124	2,011	(113)
May	2,913	1,917	(996)
TOTAL	$18,408	$18,887	$ 479

Month	Meadowbrook Junior High School 1977-78	1979-80	Difference
September	$9,146	$7,807	$(1,339)
October	7,569	6,476	(1,093)
November	5,458	4,956	(502)
December	5,242	4,201	(1,041)
January	4,971	3,876	(1,095)
February	5,808	2,439	(3,369)
March	5,360	5,777	417
April	5,360	4,912	(448)
May	6,920	6,303	(617)
TOTAL	$55,834	$46,747	$(9,087)

APPENDIX C
(continued)

	Memorial Junior High School		
Month	1977-78	1979-80	Difference
September	$3,054	$2,751	$(303)
October	1,452	2,643	1,191
November	1,589	1,676	87
December	1,588	1,501	(87)
January	1,530	1,579	49
February	1,653	1,621	(32)
March	1,513	1,949	436
April	2,136	1,832	(304)
May	2,835	2,776	(59)
TOTAL	$17,350	$18,328	$ 978

	Ocoee Junior High School		
Month	1977-78	1979-80	Difference
September	$4,546	$3,457	$(1,089)
October	2,237	2,494	257
November	2,624	1,909	(715)
December	2,195	1,770	(425)
January	3,061	2,079	(982)
February	2,398	2,173	(225)
March	2,253	2,098	(155)
April	3,392	2,041	(1,351)
May	4,764	3,306	(1,458)
TOTAL	$27,470	$21,327	$(6,143)

	Robinswood Junior High School		
Month	1977-78	1979-80	Difference
September	$3,935	$3,306	$(629)
October	4,145	6,016	1,871
November	3,901	4,139	238
December	4,137	3,289	(848)
January	3,958	3,355	(603)
February	4,038	3,660	(378)
March	3,507	3,796	289
April	3,754	3,632	(122)
May	3,494	5,434	1,940
TOTAL	$34,869	$36,627	$ 1,758

APPENDIX C
(continued)

Union Park Junior High School

Month	1977-78	1979-80	Difference
September	$4,888	$6,523	$ 1,635
October	4,302	5,365	1,063
November	3,562	3,911	349
December	2,925	3,420	495
January	3,166	3,559	393
February	3,339	3,537	198
March	3,504	5,166	1,662
April	4,920	4,656	(264)
May	5,546	6,185	639
TOTAL	$36,152	$42,322	$ 6,170

Walker Junior High School

Month	1977-78	1979-80	Difference
September	$7,810	$7,251	$(559)
October	9,081	6,197	(2,884)
November	7,041	5,563	(1,478)
December	4,402	3,951	(451)
January	3,555	3,550	(5)
February	3,706	4,052	346
March	4,139	3,741	(398)
April	4,772	4,761	(11)
May	6,608	5,441	(627)
TOTAL	$50,574	$44,507	$(6,067)

Westridge Junior High School

Month	1977-78	1979-80	Difference
September	$7,514	$4,264	$(3,250)
October	4,783	3,495	(1,288)
November	5,335	2,861	(2,474)
December	7,274	2,937	(4,337)
January	7,548	4,238	(3,310)
February	6,998	3,950	(3,048)
March	5,411	3,232	(2,179)
April	6,135	3,980	(2,155)
May	7,506	3,900	(3,606)
TOTAL	$58,504	$32,857	$(25,647)

APPENDIX C
(continued)

	Winter Park Junior High School		
Month	1977-78	1979-80	Difference
September	$3,656	$4,388	$ 732
October	2,874	3,780	906
November	2,224	2,599	375
December	1,822	1,977	155
January	1,855	1,823	(32)
February	2,174	2,169	(5)
March	1,971	2,151	180
April	2,317	2,273	(44)
May	3,368	3,458	90
TOTAL	$22,261	$24,618	$ 2,357

APPENDIX D

INDIVIDUAL SENIOR HIGH SCHOOL DOLLAR COSTS BY MONTH FOR ELECTRIC ENERGY 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Apopka High School

Month	1977-78	1979-80	Difference
September	$14,082	$17,638	$ 3,556
October	9,129	14,938	5,809
November	14,570	7,376	(7,194)
December	7,948	7,601	(347)
January	9,051	7,511	(1,540)
February	10,991	7,782	(3,209)
March	10,616	6,655	(3,961)
April	11,397	6,925	(4,472)
May	11,397	9,043	(2,354)
TOTAL	$99,181	$85,469	$(13,712)

Boone High School

Month	1977-78	1979-80	Difference
September	$ 7,039	$ 4,527	$(2,512)
October	7,654	6,632	(1,022)
November	3,857	5,940	2,083
December	4,477	4,208	(269)
January	4,269	3,246	(1,023)
February	5,189	4,189	(1,000)
March	4,463	4,720	257
April	5,548	4,709	(839)
May	7,077	5,094	(1,983)
TOTAL	$49,573	$43,265	$(6,308)

Colonial High School

Month	1977-78	1979-80	Difference
September	$ 8,644	$ 7,834	$(810)
October	5,529	7,380	1,851
November	5,894	5,998	104
December	5,369	4,996	(373)
January	6,089	4,535	(1,554)
February	6,454	5,826	(628)
March	6,033	5,894	(139)
April	5,646	5,712	66
May	8,025	7,614	(411)
TOTAL	$57,683	$55,789	$(1,894)

APPENDIX D
(continued)

Edgewater High School

Month	1977-78	1979-80	Difference
September	$ 4,574	$ 4,560	$(14)
October	4,008	5,030	1,022
November	3,605	4,081	476
December	4,358	3,338	(1,020)
January	3,846	2,545	(1,301)
February	3,934	3,125	(809)
March	3,913	3,630	(283)
April	3,910	3,389	(521)
May	5,624	4,820	(804)
TOTAL	$37,772	$34,518	$(3,254)

Evans High School

Month	1977-78	1979-80	Difference
September	$13,139	$13,584	$ 445
October	8,869	10,007	1,138
November	9,341	6,810	(2,531)
December	7,555	6,552	(1,003)
January	8,550	6,733	(1,817)
February	8,083	6,325	(1,758)
March	8,154	8,103	(51)
April	9,724	7,243	(2,481)
May	8,963	9,509	546
TOTAL	$82,378	$74,866	$(7,512)

Jones High School

Month	1977-78	1979-80	Difference
September	$ 5,112	$ 4,075	$(1,037)
October	2,694	3,850	1,156
November	2,663	2,790	127
December	2,708	1,295	(1,413)
January	3,414	2,362	(1,052)
February	3,662	3,180	(482)
March	2,634	2,816	182
April	3,222	1,999	(1,223)
May	4,368	2,596	(1,772)
TOTAL	$30,477	$24,963	$(5,514)

APPENDIX D
(continued)

Oak Ridge High School

Month	1977-78	1979-80	Difference
September	$12,539	$13,381	$ 842
October	14,060	10,260	(3,800)
November	11,060	10,269	(791)
December	10,060	12,990	2,930
January	11,137	3,577	(7,560)
February	12,379	7,511	(4,868)
March	10,250	6,430	(3,820)
April	10,846	6,268	(4,578)
May	10,737	7,052	(3,685)
TOTAL	$103,068	$77,738	$(25,330)

West Orange High School

Month	1977-78	1979-80	Difference
September	$17,506	$17,766	$ 260
October	12,549	16,026	3,477
November	11,245	10,310	(935)
December	9,013	6,463	(2,550)
January	12,141	6,358	(5,783)
February	11,932	7,791	(4,141)
March	11,932	8,178	(3,754)
April	12,953	6,865	(6,088)
May			
TOTAL	$113,324	$90,134	$(23,190)

Winter Park High School

Month	1977-78	1979-80	Difference
September	$17,979	$19,011	$ 1,032
October	15,353	19,623	4,270
November	14,390	11,221	(3,169)
December	13,487	11,011	(2,476)
January	12,364	11,251	(1,113)
February	14,595	11,492	(3,103)
March	11,822	11,492	(330)
April	14,740	10,920	(3,820)
May	16,215	13,174	(3,041)
TOTAL	$130,945	$119,195	$(11,750)

APPENDIX E

INDIVIDUAL ADULT VOCATIONAL-TECHNICAL SCHOOL DOLLAR COSTS BY MONTH FOR ELECTRIC ENERGY 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

McCoy Vocational-Technical School

Month	1977-78	1979-80	Difference
September	$ 2,089	$ 2,259	$ 170
October	1,553	2,327	774
November	1,260	1,685	425
December	1,053	1,115	62
January	825	832	7
February	911	1,143	232
March	986	1,276	290
April	1,284	1,812	528
May	1,983	2,306	323
TOTAL	$11,944	$14,755	$ 2,811

Orange County Vocational-Technical School

Month	1977-78	1979-80	Difference
September	$ 2,210	$ 1,814	$(396)
October	1,162	1,714	552
November	1,137	1,343	206
December	1,117	1,106	(11)
January	1,088	1,090	2
February	1,163	1,172	9
March	1,205	1,310	105
April	1,168	1,307	139
May	1,749	1,767	18
TOTAL	$11,999	$12,623	$ 624

Webster Adult Vocational-Technical School

Month	1977-78	1979-80	Difference
September	$ 3,535	$ 3,714	$ 179
October	2,990	3,233	243
November	2,033	3,536	1,503
December	1,911	929	(982)
January	1,942	1,903	(39)
February	2,686	2,704	18
March	2,166	2,158	(8)
April	2,167	1,670	(497)
May	2,791	2,785	(6)
TOTAL	$22,221	$22,632	$ 411

APPENDIX E
(continued)

	Westside Adult Vocational-Technical School		
Month	1977-78	1979-80	Difference
September	$ 3,520	$ 4,496	$ 976
October	2,364	3,573	1,209
November	2,612	2,731	119
December	2,220	2,440	220
January	2,583	2,719	136
February	2,843	2,699	(144)
March	3,010	2,858	(152)
April	2,663	2,610	(53)
May	3,840	3,783	(57)
TOTAL	$25,655	$27,909	$ 2,254

APPENDIX F

INDIVIDUAL ELEMENTARY SCHOOL ELECTRIC ENERGY CONSUMPTION BY MONTH 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Aloma Elementary School

Month	1977-78	1979-80	Difference
September	54,360 KWH	37,170 KWH	(17,190) KWH
October	39,780	43,020	3,240
November	38,790	37,440	(1,350)
December	26,910	27,090	180
January	31,590	24,930	(6,660)
February	24,840	28,260	3,420
March	37,980	32,130	(5,850)
April	39,960	32,220	(7,740)
May	49,230	43,200	(6,030)
TOTAL	343,440 KWH	305,460 KWH	(37,980) KWH

Apopka Elementary School

Month	1977-78	1979-80	Difference
September	48,600 KWH	55,620 KWH	7,020 KWH
October	37,800	50,580	12,780
November	33,120	40,410	7,290
December	37,620	34,470	(3,150)
January	35,460	30,420	(5,040)
February	36,900	38,790	1,890
March	33,660	34,380	720
April	42,660	34,740	(7,920)
May	45,540	39,510	(6,030)
TOTAL	351,360 KWH	358,920 KWH	7,560 KWH

Audubon Park Elementary School

Month	1977-78	1979-80	Difference
September	40,768 KWH	47,940 KWH	7,172 KWH
October	36,328	43,100	6,772
November	30,288	28,248	(2,040)
December	63,180	24,244	(38,936)
January	16,552	23,296	6,744
February	77,340	38,096	(39,244)
March	37,236	33,324	(3,912)
April	30,036	25,424	(4,612)
May	48,736	41,968	(6,768)
TOTAL	380,464 KWH	305,640 KWH	(74,824) KWH

APPENDIX F
(continued)

Azalea Park Elementary School

Month	1977-78	1979-80	Difference
September	51,745 KWH	42,082 KWH	(9,663) KWH
October	29,106	34,067	4,961
November	24,403	19,430	(4,973)
December	19,135	16,838	(2,297)
January	27,033	17,096	(9,937)
February	29,282	17,302	(11,980)
March	23,494	19,240	(4,254)
April	24,777	17,578	(7,199)
May	45,821	31,789	(14,032)
TOTAL	274,796 KWH	215,422 KWH	(59,374) KWH

Blankner Elementary School

Month	1977-78	1979-80	Difference
September	39,058 KWH	34,460 KWH	(4,598) KWH
October	18,900	22,932	4,032
November	20,898	16,726	(4,172)
December	14,742	12,022	(2,720)
January	18,534	19,242	708
February	19,528	17,534	(1,994)
March	19,330	15,464	(3,866)
April	26,362	18,500	(7,862)
May	42,474	38,272	(4,202)
TOTAL	219,826 KWH	195,152 KWH	(24,674) KWH

Bonneville Elementary School

Month	1977-78	1979-80	Difference
September	48,000 KWH	28,950 KWH	(19,050) KWH
October	36,450	32,400	(4,050)
November	25,800	24,600	(1,200)
December	22,350	18,450	(3,900)
January	23,700	20,850	(2,850)
February	30,450	25,200	(5,250)
March	23,250	20,550	(2,700)
April	21,900	17,100	(4,800)
May	33,750	26,400	(7,350)
TOTAL	265,650 KWH	214,500 KWH	(51,150) KWH

APPENDIX F
(continued)

Brookshire Elementary School

Month	1977-78	1979-80	Difference
September	43,450 KWH	25,512 KWH	(17,938) KWH
October	25,930	26,492	562
November	22,570	19,592	(2,978)
December	15,730	14,792	(938)
January	18,790	17,192	(1,598)
February	20,050	16,952	(3,098)
March	19,990	18,752	(1,238)
April	27,480	14,552	(12,928)
May	34,750	31,112	(3,638)
TOTAL	228,740 KWH	184,948 KWH	(43,792) KWH

Catalina Elementary School

Month	1977-78	1979-80	Difference
September	37,258 KWH	37,184 KWH	(74) KWH
October	21,604	35,831	14,227
November	24,174	5,967	(18,207)
December	19,275	14,362	(4,913)
January	28,409	21,101	(7,308)
February	28,510	24,094	(4,416)
March	17,563	18,462	899
April	26,249	15,868	(10,381)
May	37,184	30,864	(6,320)
TOTAL	240,226 KWH	203,733 KWH	(36,493) KWH

Cheney Elementary School

Month	1977-78	1979-80	Difference
September	45,862 KWH	39,956 KWH	(5,906) KWH
October	31,338	36,306	4,968
November	30,803	23,237	(7,566)
December	18,044	20,336	2,292
January	22,426	21,356	(1,070)
February	19,149	17,456	(1,693)
March	25,511	21,036	(4,475)
April	26,155	21,116	(5,039)
May	41,598	31,563	(10,035)
TOTAL	260,886 KWH	232,362 KWH	(28,524) KWH

APPENDIX F
(continued)

Chickasaw Elementary School

Month	1977-78	1979-80	Difference
September	53,696 KWH	46,960 KWH	(6,736) KWH
October	39,297	41,902	2,605
November	30,337	30,248	(89)
December	23,929	24,565	636
January	24,126	21,934	(2,192)
February	24,177	25,436	1,259
March	24,776	33,794	9,018
April	29,906	25,296	(4,610)
May	44,562	42,108	(2,454)
TOTAL	294,806 KWH	292,243 KWH	(2,563) KWH

Columbia Elementary School

Month	1977-78	1979-80	Difference
September	54,540 KWH	45,990 KWH	(8,550) KWH
October	51,490	50,400	(1,090)
November	46,080	45,720	(360)
December	40,410	36,810	(3,600)
January	32,220	27,000	(5,220)
February	38,430	30,510	(7,920)
March	35,190	32,040	(3,150)
April	40,590	34,650	(5,940)
May	49,950	38,430	(11,520)
TOTAL	388,900 KWH	341,550 KWH	(47,350) KWH

Conway Elementary School

Month	1977-78	1979-80	Difference
September	36,975 KWH	36,900 KWH	(75) KWH
October	23,775	21,525	(2,250)
November	21,900	19,275	(2,625)
December	20,175	16,575	(3,600)
January	31,575	20,325	(11,250)
February	27,000	22,800	(4,200)
March	19,050	18,450	(600)
April	28,425	16,350	(12,075)
May	41,475	34,350	(7,125)
TOTAL	250,350 KWH	206,550 KWH	(43,800) KWH

APPENDIX F
(continued)

Cypress Park Elementary School

Month	1977-78	1979-80	Difference
September	12,600 KWH	14,760 KWH	2,160 KWH
October	9,600	11,880	2,280
November	8,280	11,900	3,620
December	6,960	8,660	1,700
January	9,000	10,520	1,520
February	8,640	8,520	(120)
March	7,680	8,820	1,140
April	12,000	10,440	(1,560)
May	15,360	15,600	240
TOTAL	90,120 KWH	101,100 KWH	10,980 KWH

Dillard Street Elementary School

Month	1977-78	1979-80	Difference
September	77,755 KWH	48,675 KWH	(29,080) KWH
October	46,097	56,850	10,753
November	45,542	40,500	(5,042)
December	37,211	30,900	(6,311)
January	57,205	36,825	(20,380)
February	51,096	39,450	(11,646)
March	45,542	41,550	(3,992)
April	65,536	41,550	(23,986)
May	93,861	58,425	(35,436)
TOTAL	519,845 KWH	394,725 KWH	(125,120) KWH

Dommerich Elementary School

Month	1977-78	1979-80	Difference
September	46,050 KWH	42,000 KWH	(4,050) KWH
October	38,700	44,100	5,400
November	46,200	33,000	(13,200)
December	42,900	30,900	(12,000)
January	50,250	37,200	(13,050)
February	41,850	31,500	(10,350)
March	37,350	39,300	1,950
April	43,350	32,400	(10,950)
May	45,750	61,800	16,050
TOTAL	392,400 KWH	352,200 KWH	(40,200) KWH

APPENDIX F
(continued)

Dover Shores Elementary School

Month	1977-78	1979-80	Difference
September	44,958 KWH	46,443 KWH	1,485 KWH
October	25,086	29,016	3,930
November	26,880	21,735	(5,145)
December	21,420	18,111	(3,309)
January	23,529	24,117	588
February	25,683	24,123	(1,560)
March	29,352	23,595	(5,757)
April	37,761	34,755	(3,006)
May	52,485	42,876	(9,609)
TOTAL	287,154 KWH	264,771 KWH	(22,383) KWH

Dream Lake Elementary School

Month	1977-78	1979-80	Difference
September	39,000 KWH	31,950 KWH	(7,050) KWH
October	20,700	18,900	(1,800)
November	17,400	16,050	(1,350)
December	17,550	14,250	(3,300)
January	21,450	16,500	(4,950)
February	22,500	18,900	(3,600)
March	15,450	16,950	1,500
April	23,400	15,000	(8,400)
May	41,700	30,000	(11,700)
TOTAL	219,150 KWH	178,500 KWH	(40,650) KWH

Durrance Elementary School

Month	1977-78	1979-80	Difference
September	37,920 KWH	23,040 KWH	(14,880) KWH
October	28,640	22,080	(6,560)
November	24,160	19,800	(4,360)
December	18,840	16,560	(2,280)
January	17,740	14,520	(3,220)
February	21,600	18,840	(2,760)
March	22,600	20,160	(2,440)
April	21,400	16,920	(4,480)
May	34,160	31,000	(3,160)
TOTAL	227,060 KWH	182,920 KWH	(44,140) KWH

APPENDIX F
(continued)

Eccleston Elementary School

Month	1977-78	1979-80	Difference
September	136,202 KWH	49,020 KWH	(87,182) KWH
October	38,384	46,367	7,983
November	29,525	25,618	(3,907)
December	25,480	24,502	(978)
January	32,358	32,584	226
February	31,058	35,182	4,124
March	27,721	32,460	4,739
April	33,710	26,369	(7,341)
May	52,312	49,316	(2,996)
TOTAL	406,750 KWH	321,418 KWH	(85,332) KWH

Engelwood Elementary School

Month	1977-78	1979-80	Difference
September	47,796 KWH	50,477 KWH	2,681 KWH
October	28,334	34,121	5,787
November	23,196	22,481	(715)
December	20,532	20,772	240
January	31,555	18,598	(12,957)
February	28,927	27,252	(1,675)
March	24,660	26,105	1,445
April	27,838	14,340	(13,498)
May	47,338	34,838	(12,500)
TOTAL	280,176	248,984	(31,192) KWH

Fern Creek Elementary School

Month	1977-78	1979-80	Difference
September	48,339 KWH	40,541 KWH	(7,798) KWH
October	36,314	35,903	(411)
November	32,824	23,015	(9,809)
December	21,584	21,959	375
January	22,308	17,740	(4,568)
February	23,652	24,046	394
March	23,368	23,538	170
April	25,085	20,899	(4,186)
May	36,126	33,213	(2,913)
TOTAL	269,600 KWH	240,854 KWH	(28,746) KWH

APPENDIX F
(continued)

Grand Avenue Elementary School

Month	1977-78	1979-80	Difference
September	27,843 KWH	30,586 KWH	2,743 KWH
October	16,269	23,690	7,421
November	17,387	20,128	2,741
December	1,211	15,014	13,803
January	18,510	25,120	6,610
February	18,349	19,352	1,003
March	14,987	14,712	(275)
April	14,000	17,589	3,589
May	21,525	29,803	8,278
TOTAL	150,081 KWH	195,994 KWH	45,913 KWH

Hiawassee Elementary School

Month	1977-78	1979-80	Difference
September	53,808 KWH	46,304 KWH	(7,504) KWH
October	43,232	43,072	(160)
November	46,912	34,912	(12,000)
December	28,192	24,336	(3,856)
January	27,040	23,856	(3,184)
February	26,768	29,936	3,168
March	38,112	35,872	(2,240)
April	41,808	31,216	(10,592)
May	58,644	44,032	(14,612)
TOTAL	364,516 KWH	313,536 KWH	(50,980) KWH

Hillcrest Elementary School

Month	1977-78	1979-80	Difference
September	27,848 KWH	20,632 KWH	(7,216) KWH
October	19,029	19,173	144
November	17,726	14,694	(3,032)
December	14,138	11,482	(2,656)
January	23,717	11,067	(12,650)
February	25,464	15,715	(9,749)
March	14,222	11,251	(2,971)
April	13,256	6,859	(6,397)
May	22,390	15,197	(7,193)
TOTAL	177,790 KWH	126,070 KWH	(51,720) KWH

APPENDIX F
(continued)

Ivey Lane Elementary School

Month	1977-78	1979-80	Difference
September	55,820 KWH	57,010 KWH	1,190 KWH
October	37,800	49,220	11,420
November	39,680	38,320	(1,360)
December	26,260	32,970	6,710
January	28,270	39,790	11,520
February	30,870	39,160	8,290
March	36,120	40,370	4,250
April	39,390	38,090	(1,300)
May	57,750	49,620	(8,130)
TOTAL	351,960 KWH	384,550 KWH	32,590 KWH

Kaley Elementary School

Month	1977-78	1979-80	Difference
September	29,483 KWH	26,198 KWH	(3,285) KWH
October	17,561	17,952	391
November	17,836	12,491	(5,345)
December	12,725	10,399	(2,326)
January	16,123	13,705	(2,418)
February	15,809	14,602	(1,207)
March	14,749	9,519	(5,230)
April	24,574	14,449	(10,125)
May	29,979	23,581	(6,398)
TOTAL	178,839 KWH	142,896 KWH	(35,943) KWH

Killarney Elementary School

Month	1977-78	1979-80	Difference
September	40,640 KWH	32,960 KWH	(7,680) KWH
October	26,240	26,240	-0-
November	20,160	20,160	-0-
December	15,360	16,320	960
January	17,280	16,320	(960)
February	22,080	22,080	-0-
March	17,600	22,080	4,480
April	17,280	16,320	(960)
May	26,560	24,960	(1,600)
TOTAL	203,200 KWH	197,440 KWH	(5,760) KWH

APPENDIX F
(continued)

Lake Como Elementary School

Month	1977-78	1979-80	Difference
September	39,888 KWH	25,560 KWH	(14,328) KWH
October	35,265	32,955	(2,310)
November	22,065	19,598	(2,467)
December	24,289	20,198	(4,091)
January	19,344	14,537	(4,807)
February	26,147	21,546	(4,601)
March	22,504	22,639	135
April	19,955	17,680	(2,275)
May	32,378	25,559	(6,819)
TOTAL	241,835 KWH	200,272 KWH	(41,563) KWH

Lake Silver Elementary School

Month	1977-78	1979-80	Difference
September	33,155 KWH	31,115 KWH	(2,040) KWH
October	27,335	24,180	(3,155)
November	15,136	14,401	(735)
December	14,710	12,851	(1,859)
January	15,830	11,580	(4,250)
February	17,846	20,995	3,149
March	15,717	18,449	2,732
April	15,637	23,738	8,101
May	26,380	16,234	(10,146)
TOTAL	181,746 KWH	173,543 KWH	(8,203) KWH

Lake Sybelia Elementary School

Month	1977-78	1979-80	Difference
September	56,100 KWH	52,050 KWH	(4,050) KWH
October	43,800	53,100	9,300
November	37,350	30,000	(7,350)
December	31,200	25,800	(5,400)
January	34,650	31,950	(2,700)
February	32,250	35,400	3,150
March	41,100	43,350	2,250
April	46,500	42,150	(4,350)
May	58,500	65,400	6,900
TOTAL	381,450 KWH	379,200 KWH	(2,250) KWH

APPENDIX F
(continued)

Lake Weston Elementary School

Month	1977-78	1979-80	Difference
September	47,100 KWH	28,050 KWH	(19,050) KWH
October	29,550	23,475	(6,075)
November	32,400	20,250	(12,150)
December	21,750	20,250	(1,500)
January	42,150	21,675	(20,475)
February	32,400	16,725	(15,675)
March	23,625	24,000	375
April	33,525	12,900	(20,625)
May	40,800	29,175	(11,625)
TOTAL	303,300 KWH	196,500 KWH	(106,800) KWH

Lakemont Elementary School

Month	1977-78	1979-80	Difference
September	35,990 KWH	30,930 KWH	(5,060) KWH
October	18,950	29,040	10,090
November	19,620	20,690	1,070
December	14,600	16,510	1,910
January	22,420	20,560	(1,860)
February	23,660	22,130	(1,530)
March	21,840	19,980	(1,860)
April	28,050	16,380	(11,670)
May	37,000	31,080	(5,920)
TOTAL	222,130 KWH	207,300 KWH	(14,830) KWH

Lancaster Elementary School

Month	1977-78	1979-80	Difference
September	46,950 KWH	41,775 KWH	(5,175) KWH
October	34,800	33,450	(1,350)
November	24,450	25,575	1,125
December	27,000	21,300	(5,700)
January	35,850	32,175	(3,675)
February	31,200	28,200	(3,000)
March	23,250	25,725	2,475
April	45,000	32,775	(12,225)
May	50,250	47,775	(2,475)
TOTAL	318,750 KWH	288,750 KWH	(30,000) KWH

APPENDIX F
(continued)

Lockhart Elementary School

Month	1977-78	1979-80	Difference
September	29,610 KWH	23,490 KWH	(6,120) KWH
October	20,070	19,710	(360)
November	14,760	13,410	(1,350)
December	11,970	10,980	(990)
January	11,790	8,910	(2,880)
February	13,140	10,620	(2,520)
March	14,400	14,040	(360)
April	14,670	11,160	(3,510)
May	24,210	18,450	(5,760)
TOTAL	154,620 KWH	130,770 KWH	(23,850) KWH

Lovell Elementary School

Month	1977-78	1979-80	Difference
September	48,600 KWH	28,575 KWH	(20,025) KWH
October	29,025	71,400	42,375
November	27,825	30,825	3,000
December	34,950	20,550	(14,400)
January	34,800	20,775	(14,025)
February	37,500	28,575	(8,925)
March	27,900	24,825	(3,075)
April	37,650	25,500	(12,150)
May	52,875	33,150	(19,725)
TOTAL	331,125 KWH	284,175 KWH	(46,950) KWH

Maxey Elementary School

Month	1977-78	1979-80	Difference
September	49,920 KWH	42,720 KWH	(7,200) KWH
October	35,640	36,600	960
November	37,560	31,320	(6,240)
December	26,040	48,480	22,440
January	27,600	2,160	(25,440)
February	30,240	25,680	(4,560)
March	30,240	27,960	(2,280)
April	30,120	24,600	(5,520)
May	53,760	35,774	(17,986)
TOTAL	321,120 KWH	275,294 KWH	(45,826) KWH

APPENDIX F
(continued)

McCoy Elementary School

Month	1977-78	1979-80	Difference
September	62,752 KWH	47,288 KWH	(15,464) KWH
October	54,672	56,608	1,936
November	47,324	49,576	2,252
December	82,388	37,296	(45,092)
January	46,944	27,216	(19,728)
February	55,656	36,256	(19,400)
March	66,944	36,076	(30,868)
April	76,608	41,648	(34,960)
May	92,056	44,768	(47,288)
TOTAL	583,344 KWH	376,732 KWH	(208,612) KWH

Oak Hill Elementary School

Month	1977-78	1979-80	Difference
September	119,900 KWH	86,000 KWH	(33,900) KWH
October	88,200	71,400	(16,800)
November	83,300	72,000	(11,300)
December	73,700	73,200	(500)
January	92,100	74,000	(18,100)
February	90,400	77,900	(12,500)
March	94,600	75,800	(18,800)
April	101,500	68,900	(32,600)
May	106,700	80,500	(26,200)
TOTAL	850,400 KWH	679,700 KWH	(170,700) KWH

Orange Center Elementary School

Month	1977-78	1979-80	Difference
September	45,656 KWH	60,397	14,741) KWH
October	38,610	45,806	7,196
November	46,456	37,646	(8,810)
December	35,012	33,654	(1,358)
January	47,307	48,877	1,570
February	57,066	51,254	(5,812)
March	38,442	44,373	5,931
April	39,734	37,005	(2,729)
May	50,456	51,416	960
TOTAL	398,739 KWH	410,428 KWH	11,689 KWH

APPENDIX F
(continued)

Orlo Vista Elementary School

Month	1977-78	1979-80	Difference
September	42,375 KWH	37,275 KWH	(5,100) KWH
October	25,875	25,500	(375)
November	26,250	20,100	(6,150)
December	24,600	16,350	(8,250)
January	22,575	20,775	(1,800)
February	29,025	23,850	(6,600)
March	22,800	23,850	1,050
April	28,575	23,100	(5,475)
May	44,025	33,450	(10,575)
TOTAL	266,100 KWH	222,825 KWH	(43,275) KWH

Palmetto Elementary School

Month	1977-78	1979-80	Difference
September	96,408 KWH	77,160 KWH	(19,248) KWH
October	81,140	81,000	(140)
November	99,024	72,192	(26,832)
December	103,316	58,032	(45,284)
January	102,696	85,656	(17,040)
February	97,368	82,056	(15,312)
March	96,648	81,120	(15,528)
April	107,208	74,784	(32,424)
May	118,272	87,024	(31,248)
TOTAL	902,080 KWH	699,024 KWH	(203,056) KWH

Pershing Elementary School

Month	1977-78	1979-80	Difference
September	48,000 KWH	50,400 KWH	2,400 KWH
October	36,600	39,004	2,400
November	26,400	31,050	4,650
December	22,350	23,550	1,200
January	26,550	22,800	(3,750)
February	30,300	26,250	(4,050)
March	27,000	30,900	3,900
April	25,800	26,400	600
May	45,000	25,500	(19,500)
TOTAL	288,000 KWH	275,850 KWH	(12,150) KWH

APPENDIX F
(continued)

Pinar Elementary School

Month	1977-78	1979-80	Difference
September	105,900 KWH	98,621 KWH	(7,279) KWH
October	88,850	67,871	(20,179)
November	96,150	95,021	(1,129)
December	74,250	77,771	3,521
January	107,850	111,671	3,821
February	101,100	107,321	6,221
March	89,400	87,671	(1,729)
April	93,900	104,621	10,721
May	111,750	127,500	15,750
TOTAL	868,350 KWH	878,068 KWH	9,718 KWH

Pine Hills Elementary School

Month	1977-78	1979-80	Difference
September	21,313 KWH	12,085 KWH	(9,228) KWH
October	15,467	26,749	11,282
November	17,702	14,818	(2,884)
December	11,225	11,618	393
January	19,547	21,542	1,995
February	18,023	8,985	(9,038)
March	17,928	14,742	(3,186)
April	14,826	11,935	(2,891)
May	20,670	17,224	(3,446)
TOTAL	156,162 KWH	139,698 KWH	(17,003) KWH

Pineloch Elementary School

Month	1977-78	1979-80	Difference
September	41,450 KWH	33,330 KWH	(8,120) KWH
October	16,474	22,166	5,692
November	21,350	16,658	(4,692)
December	17,852	13,497	(4,355)
January	24,297	21,847	(2,450)
February	22,719	22,370	(359)
March	16,799	10,697	2,898
April	26,529	13,174	(13,355)
May	36,682	34,297	(2,385)
TOTAL	224,162 KWH	197,036 KWH	(27,126) KWH

APPENDIX F
(continued)

Princeton Elementary School

Month	1977-78	1979-80	Difference
September	30,676 KWH	27,902 KWH	(2,774) KWH
October	23,171	30,602	7,431
November	19,934	18,161	(1,773)
December	18,331	17,018	(1,313)
January	18,531	13,806	(4,725)
February	18,899	17,432	(1,467)
March	19,143	18,158	(985)
April	18,871	15,562	(3,309)
May	26,868	24,604	(2,264)
TOTAL	194,424 KWH	183,245 KWH	(11,179) KWH

Ray Elementary School

Month	1977-78	1979-80	Difference
September	43,559 KWH	38,235 KWH	(5,324) KWH
October	22,885	27,757	4,872
November	25,635	16,135	(9,500)
December	14,294	11,463	(2,831)
January	16,345	12,694	(3,651)
February	17,010	13,464	(3,546)
March	19,179	15,943	(3,236)
April	23,383	16,563	(6,820)
May	42,682	31,310	(11,372)
TOTAL	224,972 KWH	183,564 KWH	(41,408) KWH

Richmond Heights Elementary School

Month	1977-78	1979-80	Difference
September	55,413 KWH	47,577 KWH	(7,836) KWH
October	35,898	48,204	12,306
November	41,607	29,592	(12,015)
December	25,122	28,974	3,852
January	26,580	25,383	(1,197)
February	28,971	26,844	(2,127)
March	30,186	29,874	(312)
April	40,971	28,653	(12,318)
May	56,284	37,983	(18,301)
TOTAL	341,032 KWH	303,084 KWH	(37,948) KWH

APPENDIX F
(continued)

Ridgewood Park Elementary School

Month	1977-78	1979-80	Difference
September	54,480 KWH	42,360 KWH	(12,120) KWH
October	44,160	45,120	960
November	42,360	13,800	(28,560)
December	31,920	12,960	(18,960)
January	31,920	26,640	(5,280)
February	30,360	19,440	(10,920)
March	36,360	27,840	(8,520)
April	40,320	25,680	(14,640)
May	48,360	45,960	(2,400)
TOTAL	360,240 KWH	259,800 KWH	(100,440) KWH

Riverside Elementary School

Month	1977-78	1979-80	Difference
September	50,400 KWH	40,230 KWH	(10,170) KWH
October	44,370	43,380	(990)
November	41,400	32,040	(9,360)
December	36,630	19,170	(17,460)
January	24,480	16,560	(7,920)
February	21,870	16,290	(5,580)
March	33,390	21,690	(11,700)
April	41,750	26,910	(14,850)
May	45,450	34,200	(11,250)
TOTAL	339,740 KWH	250,470 KWH	(89,280) KWH

Rock Lake Elementary School

Month	1977-78	1979-80	Difference
September	31,853 KWH	40,845 KWH	8,992 KWH
October	50,134	35,085	(15,049)
November	30,452	25,614	(4,838)
December	28,227	20,602	(7,625)
January	20,632	21,722	1,090
February	23,670	27,640	3,970
March	24,981	26,406	1,425
April	25,901	25,110	(791)
May	29,865	42,602	12,737
TOTAL	265,715 KWH	265,626 KWH	(89) KWH

APPENDIX F
(continued)

Rolling Hills Elementary School

Month	1977-78	1979-80	Difference
September	50,250 KWH	41,700 KWH	(8,550) KWH
October	34,650	30,000	(4,650)
November	27,000	25,500	(1,500)
December	23,100	18,900	(4,200)
January	39,000	21,150	(17,850)
February	44,550	19,950	(24,600)
March	27,300	29,250	1,950
April	28,650	37,050	8,400
May	43,500	35,850	(7,650)
TOTAL	318,000 KWH	259,350 KWH	(58,650) KWH

Sadler Elementary School

Month	1977-78	1979-80	Difference
September	71,482 KWH	65,237 KWH	(6,245) KWH
October	54,247	59,945	5,698
November	53,215	51,312	(1,903)
December	37,375	48,881	11,506
January	40,018	41,455	1,437
February	52,975	50,328	(2,647)
March	54,427	51,770	(2,657)
April	58,027	46,980	(11,047)
May	57,794	63,310	5,516
TOTAL	479,560 KWH	479,218 KWH	(342) KWH

Shenandoah Elementary School

Month	1977-78	1979-80	Difference
September	54,240 KWH	44,280 KWH	(9,960) KWH
October	44,220	38,940	(5,280)
November	41,580	36,180	(5,400)
December	27,420	30,300	2,880
January	21,420	24,420	3,000
February	27,540	23,520	(4,020)
March	37,560	33,900	(3,660)
April	36,780	29,400	(7,380)
May	57,780	43,380	(14,400)
TOTAL	348,540 KWH	304,320 KWH	(44,220) KWH

APPENDIX F
(continued)

Spring Lake Elementary School

Month	1977-78	1979-80	Difference
September	56,700 KWH	37,900 KWH	(18,800) KWH
October	28,100	27,000	(1,100)
November	26,300	21,900	(4,400)
December	19,300	17,900	(1,400)
January	26,000	22,100	(3,900)
February	23,900	20,700	(3,200)
March	23,300	23,000	(300)
April	36,900	21,300	(15,600)
May	53,700	32,800	(20,900)
TOTAL	294,200 KWH	224,600 KWH	(69,600) KWH

Tangelo Park Elementary School

Month	1977-78	1979-80	Difference
September	52,300 KWH	46,650 KWH	(5,650) KWH
October	43,400	37,200	(6,200)
November	32,400	28,050	(4,350)
December	26,700	21,600	(5,100)
January	33,200	23,250	(9,950)
February	40,000	27,600	(12,400)
March	31,400	24,750	(6,650)
April	31,700	26,400	(5,300)
May	42,500	24,300	(18,200)
TOTAL	333,600 KWH	259,800 KWH	(73,800) KWH

Tildenville Elementary School

Month	1977-78	1979-80	Difference
September	32,431 KWH	26,411 KWH	(6,020) KWH
October	22,931	24,971	2,040
November	21,971	19,691	(2,280)
December	20,531	16,451	(4,080)
January	13,091	13,331	240
February	19,331	15,371	(3,960)
March	20,160	19,091	(1,069)
April	19,571	22,451	2,880
May	28,811	31,571	2,760
TOTAL	198,828 KWH	189,339 KWH	(9,489) KWH

APPENDIX F
(continued)

Union Park Elementary School

Month	1977-78	1979-80	Difference
September	60,450 KWH	44,700 KWH	(15,750) KWH
October	34,575	30,900	(3,675)
November	35,625	21,675	(13,950)
December	29,250	22,825	(6,425)
January	36,075	27,650	(8,425)
February	38,700	27,600	(11,100)
March	26,175	24,300	(1,875)
April	34,200	21,150	(13,050)
May	49,725	48,075	(1,650)
TOTAL	344,775 KWH	268,875 KWH	(75,900) KWH

Washington Shores Elementary School

Month	1977-78	1979-80	Difference
September	51,809 KWH	48,111 KWH	(3,698) KWH
October	32,862	41,078	8,216
November	34,510	21,376	(13,134)
December	24,989	17,577	(7,412)
January	31,444	17,917	(13,527)
February	28,702	20,905	(7,797)
March	27,645	17,508	(10,137)
April	33,730	17,202	(16,528)
May	52,890	34,564	(18,326)
TOTAL	318,581 KWH	236,238 KWH	(82,343) KWH

Wheatley Elementary School

Month	1977-78	1979-80	Difference
September	74,566 KWH	61,966	(12,600) KWH
October	60,841	55,891	(4,950)
November	44,266	50,716	6,450
December	42,766	42,166	(600)
January	44,491	31,516	(12,975)
February	54,391	48,616	(5,775)
March	52,066	39,991	(12,075)
April	43,666	35,716	(7,950)
May	52,741	45,691	(7,050)
TOTAL	469,794 KWH	412,269 KWH	(57,525) KWH

APPENDIX F
(continued)

Windermere Elementary School

Month	1977-78	1979-80	Difference
September	48,600 KWH	46,950 KWH	(1,650) KWH
October	39,600	39,450	(150)
November	40,800	32,850	(7,950)
December	30,000	30,450	450
January	26,700	26,250	(450)
February	32,700	29,100	(3,600)
March	35,100	33,300	(1,800)
April	36,300	29,100	(7,200)
May	45,900	38,700	(7,200)
TOTAL	335,700 KWH	306,150 KWH	(29,550) KWH

Winegard Elementary School

Month	1977-78	1979-80	Difference
September	86,400 KWH	116,400 KWH	30,000 KWH
October	102,300	101,100	(1,200)
November	109,800	101,700	(8,100)
December	73,500	49,800	(23,700)
January	97,200	46,800	(50,400)
February	94,800	55,500	(39,300)
March	98,700	51,000	(47,700)
April	101,400	70,500	(30,900)
May	105,000	75,600	(29,400)
TOTAL	869,100 KWH	668,400 KWH	(200,700) KWH

Zellwood Elementary School

Month	1977-78	1979-80	Difference
September	36,180 KWH	29,430 KWH	(6,750) KWH
October	27,720	24,390	(3,330)
November	25,380	19,485	(5,895)
December	23,210	20,925	(2,385)
January	34,695	18,585	(16,110)
February	45,495	27,765	(17,730)
March	26,370	22,365	(4,005)
April	23,805	17,955	(5,850)
May	34,020	25,155	(8,865)
TOTAL	276,975 KWH	206,055 KWH	(70,920) KWH

APPENDIX G

INDIVIDUAL SPECIAL EDUCATION CENTER ELECTRIC ENERGY CONSUMPTION BY MONTH
9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Forrest Park Special Education Center

Month	1977-78	1979-80	Difference
September	28,663 KWH	18,844 KWH	(9,819) KWH
October	20,046	21,749	1,703
November	15,913	15,649	(264)
December	15,516	14,300	(1,216)
January	13,995	10,090	(3,905)
February	17,696	15,399	(2,297)
March	16,203	15,612	(591)
April	14,738	33,827	19,089
May	21,934	20,350	(1,584)
TOTAL	164,704 KWH	165,820 KWH	1,116 KWH

Gateway Special Education Center

Month	1977-78	1979-80	Difference
September	43,200 KWH	31,860 KWH	(11,340) KWH
October	34.695	26,055	(8,640)
November	33,570	17,955	(15,615)
December	25,740	14,085	(11,655)
January	20,160	16,650	(3,510)
February	28,035	17,595	(10,440)
March	28,980	18,990	(9,990)
April	40,995	15,075	(25,920)
May	40,410	27,405	(13,005)
TOTAL	295,785 KWH	185,670 KWH	(110,115) KWH

Magnolia Special Education Center

Month	1977-78	1979-80	Difference
September	53,550 KWH	50,400 KWH	(3,150) KWH
October	56,250	57,150	900
November	57,900	49,350	(8,550)
December	57,450	42,450	(15,000)
January	51,150	40,050	(11,100)
February	93,750	51,150	(42,600)
March	121,950	44,850	(77,100)
April	84,750	36,750	(48,000)
May	61,050	43,950	(17,100)
TOTAL	637,800	416,100	(221,700)

APPENDIX H

INDIVIDUAL JUNIOR HIGH SCHOOL ELECTRIC ENERGY CONSUMPTION BY MONTH 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Apopka Junior High School

Month	1977-78	1979-80	Difference
September	109,200 KWH	92,700 KWH	(16,500) KWH
October	104,100	91,800	(12,300)
November	76,800	80,400	3,600
December	73,500	63,000	(10,500)
January	72,400	60,900	(11,500)
February	97,500	82,200	(15,300)
March	102,000	76,800	(25,200)
April	79,200	61,500	(17,700)
May	97,200	72,000	(25,200)
TOTAL	811,900 KWH	681,300 KWH	(130,600) KWH

Carver Junior High School

Month	1977-78	1979-80	Difference
September	99,742 KWH	87,509 KWH	(12,233) KWH
October	81,283	96,139	14,856
November	87,404	72,883	(14,521)
December	70,694	57,547	(13,147)
January	68,777	67,867	(910)
February	69,732	69,535	(197)
March	68,282	81,014	12,732
April	93,026	68,801	(24,225)
May	115,150	93,518	(21,632)
TOTAL	754,090 KWH	694,813 KWH	(59,277) KWH

Conway Junior High School

Month	1977-78	1979-80	Difference
September	127,950 KWH	83,400 KWH	(44,550) KWH
October	114,750	70,800	(43,950)
November	115,800	62,850	(52,950)
December	73,950	57,000	(16,950)
January	97,050	53,250	(43,800)
February	93,300	68,550	(24,750)
March	94,650	79,800	(14,850)
April	117,450	72,150	(45,300)
May	132,000	96,300	(35,700)
TOTAL	966,900 KWH	644,100 KWH	(322,800) KWH

APPENDIX H
(continued)

Glenridge Junior High School

Month	1977-78	1979-80	Difference
September	75,900 KWH	63,750 KWH	(12,150) KWH
October	40,800	54,750	13,950
November	38,850	60,000	21,150
December	32,700	5,400	(27,300)
January	39,150	30,600	(8,550)
February	42,000	40,650	(1,350)
March	34,500	47,400	12,900
April	36,150	57,750	21,600
May	65,850	15,150	(50,700)
TOTAL	405,900 KWH	375,450 KWH	(30,450) KWH

Howard Junior High School

Month	1977-78	1979-80	Difference
September	69,043 KWH	43,853 KWH	(25,190) KWH
October	56,494	58,716	2,222
November	32,897	38,011	5,114
December	34,591	23,978	(10,613)
January	23,446	16,020	(7,426)
February	31,634	22,980	(8,654)
March	33,862	26,837	(7,025)
April	11,844	26,935	15,091
May	54,688	39,245	(15,443)
TOTAL	348,499 KWH	296,575 KWH	(51,924) KWH

Jackson Junior High School

Month	1977-78	1979-80	Difference
September	83,772 KWH	63,354 KWH	(20,418) KWH
October	71,772	69,336	(2,436)
November	66,972	57,330	(9,642)
December	53,748	44,730	(9,018)
January	47,118	36,300	(10,818)
February	48,912	47,724	(1,188)
March	59,736	46,548	(13,188)
April	57,942	48,900	(9,042)
May	83,184	66,954	(16,230)
TOTAL	573,156 KWH	481,176 KWH	(91,980) KWH

APPENDIX H
(continued)

Lakeview Junior High School

Month	1977-78	1979-80	Difference
September	62,645 KWH	56,495 KWH	(6,150) KWH
October	46,970	46,145	(825)
November	39,995	34,595	(5,400)
December	31,820	31,145	(675)
January	35,645	30,845	(4,800)
February	39,095	33,305	(5,700)
March	39,845	39,845	-0-
April	39,995	31,595	(8,400)
May	60,620	46,895	(13,725)
TOTAL	396,630 KWH	350,955 KWH	(45,675) KWH

Lee Junior High School

Month	1977-78	1979-80	Difference
September	94,394 KWH	80,297 KWH	(14,097) KWH
October	75,650	81,732	6,082
November	47,972	49,330	1,358
December	45,264	39,130	(6,134)
January	42,020	31,618	(10,402)
February	45,378	42,293	(3,085)
March	46,572	43,206	(3,366)
April	49,369	44,048	(5,321)
May	70,674	64,616	(6,058)
TOTAL	517,293 KWH	476,270 KWH	(41,023) KWH

Liberty Junior High School

Month	1977-78	1979-80	Difference
September	197,400 KWH	185,400 KWH	(12,000) KWH
October	148,800	147,600	(1,200)
November	148,800	133,000	(15,800)
December	133,400	101,800	(31,600)
January	239,600	119,600	(120,000)
February	231,200	122,000	(109,200)
March	141,200	131,600	(9,600)
April	172,800	133,200	(39,600)
May	227,800	183,400	(44,400)
TOTAL	1,641,000 KWH	1,257,600 KWH	(383,400) KWH

APPENDIX H
(continued)

Lockhart Junior High School

Month	1977-78	1979-80	Difference
September	14,424 KWH	69,960 KWH	55,536 KWH
October	57,000	53,640	(3,360)
November	51,480	37,560	(13,920)
December	37,320	27,720	(9,600)
January	43,920	36,840	(7,080)
February	47,760	42,280	(5,480)
March	45,840	44,760	(1,080)
April	73,440	56,280	(17,160)
May	74,160	66,360	(7,800)
TOTAL	445,344 KWH	435,400 KWH	(9,944) KWH

Maitland Junior High School

Month	1977-78	1979-80	Difference
September	56,160 KWH	61,800 KWH	5,640 KWH
October	34,200	41,400	7,200
November	40,320	41,100	780
December	25,320	17,400	(7,920)
January	26,700	15,600	(11,100)
February	43,200	53,400	10,200
March	28,800	31,500	2,700
April	37,800	28,200	(9,600)
May	55,500	30,000	(25,500)
TOTAL	348,000 KWH	320,400 KWH	(27,600) KWH

Meadowbrook Junior High School

Month	1977-78	1979-80	Difference
September	195,000 KWH	145,200 KWH	(49,800) KWH
October	159,000	124,800	(34,200)
November	137,400	112,800	(24,600)
December	136,200	92,400	(43,800)
January	125,400	84,000	(41,400)
February	138,000	49,200	(88,800)
March	124,200	142,200	18,000
April	149,400	90,600	(58,800)
May	150,000	118,200	(31,800)
TOTAL	1,314,600 KWH	959,400 KWH	(355,200) KWH

APPENDIX H
(continued)

Memorial Junior High School

Month	1977-78	1979-80	Difference
September	79,014 KWH	72,444 KWH	(6,570)
October	43,188	69,720	26,532
November	45,294	40,488	(4,806)
December	31,494	32,706	1,212
January	35,598	39,246	3,648
February	38,304	41,928	3,624
March	35,076	47,742	12,666
April	58,590	43,242	(15,348)
May	77,535	73,935	(3,600)
TOTAL	444,093 KWH	461,451 KWH	17,358 KWH

Ocoee Junior High School

Month	1977-78	1979-80	Difference
September	91,800 KWH	74,250 KWH	(17,550) KWH
October	44,100	51,300	7,200
November	56,700	37,350	(19,350)
December	44,100	34,200	(9,900)
January	68,400	41,400	(27,000)
February	48,600	43,650	(4,950)
March	43,200	41,850	(1,350)
April	64,800	40,500	(24,300)
May	91,800	70,650	(21,150)
TOTAL	553,500 KWH	435,150 KWH	(118,350) KWH

Robinswood Junior High School

Month	1977-78	1979-80	Difference
September	112,602 KWH	112,200 KWH	(402) KWH
October	117,450	178,158	60,708
November	108,450	113,298	4,848
December	109,182	84,462	(24,720)
January	102,582	86,862	(15,720)
February	112,074	100,620	(11,454)
March	92,868	101,880	9,012
April	103,050	95,880	(7,170)
May	93,450	159,516	66,066
TOTAL	951,708 KWH	1,032,876 KWH	81,168 KWH

APPENDIX H
(continued)

Union Park Junior High School

Month	1977-78	1979-80	Difference
September	106,560 KWH	121,920 KWH	15,360 KWH
October	102,240	103,200	960
November	86,400	88,800	2,400
December	71,040	71,040	-0-
January	74,400	73,920	(480)
February	78,240	72,000	(6,240)
March	78,480	98,400	19,920
April	104,640	84,000	(20,640)
May	115,200	117,600	2,400
TOTAL	817,200 KWH	830,880 KWH	13,680 KWH

Walker Junior High School

Month	1977-78	1979-80	Difference
September	166,500 KWH	123,900 KWH	(42,600) KWH
October	193,500	115,500	(78,000)
November	144,600	106,200	(38,400)
December	109,500	88,200	(21,300)
January	88,200	76,800	(11,400)
February	88,500	88,200	(300)
March	94,200	79,800	(14,400)
April	110,400	87,600	(22,800)
May	129,900	101,100	(28,800)
TOTAL	1,125,300 KWH	867,300 KWH	(258,000)

Westridge Junior High School

Month	1977-78	1979-80	Difference
September	215,480 KWH	109,040 KWH	(106,440) KWH
October	180,240	83,400	(96,840)
November	183,520	67,680	(115,840)
December	191,920	63,000	(128,920)
January	202,400	103,120	(99,280)
February	178,400	95,080	(83,320)
March	158,240	73,800	(84,440)
April	204,680	98,640	(106,040)
May	227,480	98,000	(129,480)
TOTAL	1,742,360 KWH	791,760 KWH	(950,600) KWH

APPENDIX H
(continued)

Winter Park Junior High School

Month	1977-78	1979-80	Difference
September	77,400 KWH	68,100 KWH	(9,300) KWH
October	55,500	63,600	8,100
November	45,300	42,900	(2,400)
December	36,900	37,200	300
January	38,700	33,300	(5,400)
February	45,000	40,500	(4,500)
March	39,600	39,600	-0-
April	45,600	35,700	(9,900)
May	64,800	57,900	(6,900)
TOTAL	448,800 KWH	418,800 KWH	(30,000) KWH

APPENDIX I

INDIVIDUAL SENIOR HIGH SCHOOL ELECTRIC ENERGY CONSUMPTION BY MONTH 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

Apopka High School

Month	1977-78	1979-80	Difference
September	379,800 KWH	367,500 KWH	(12,300) KWH
October	192,600	313,500	120,900
November	385,200	234,000	(151,200)
December	208,800	241,500	32,700
January	247,500	238,500	(9,000)
February	291,600	247,500	(44,100)
March	278,100	210,000	(68,100)
April	264,600	219,000	(45,600)
May	260,100	289,500	29,400
TOTAL	2,508,300 KWH	2,361,000 KWH	(147,300) KWH

Boone High School

Month	1977-78	1979-80	Difference
September	216,282 KWH	195,282 KWH	(21,000) KWH
October	135,108	167,700	32,592
November	151,320	119,394	(31,926)
December	105,582	85,740	(19,842)
January	130,806	112,302	(18,504)
February	134,412	110,280	(24,132)
March	122,526	129,744	7,218
April	174,864	145,920	(28,944)
May	216,288	147,650	(68,638)
TOTAL	1,387,188 KWH	1,214,012 KWH	(173,176) KWH

Colonial High School

Month	1977-78	1979-80	Difference
September	245,872 KWH	215,517 KWH	(30,355) KWH
October	188,190	201,678	13,488
November	188,190	155,109	(33,081)
December	125,292	130,614	5,322
January	153,192	114,108	(39,084)
February	164,517	161,505	(3,012)
March	169,431	154,458	(14,973)
April	162,081	147,267	(14,814)
May	235,029	204,465	(30,564)
TOTAL	1,631,794 KWH	1,484,721 KWH	(147,073) KWH

APPENDIX I
(continued)

Edgewater High School

Month	1977-78	1979-80	Difference
September	108,246 KWH	121,968 KWH	13,722 KWH
October	135,786	141,738	5,952
November	117,012	109,272	(7,740)
December	103,860	91,098	(12,762)
January	89,465	68,172	(21,293)
February	101,826	90,372	(11,454)
March	104,460	98,364	(6,096)
April	110,550	87,000	(23,550)
May	165,180	131,574	(33,606)
TOTAL	1,036,385 KWH	939,558 KWH	(96,827) KWH

Evans High School

Month	1977-78	1979-80	Difference
September	316,800 KWH	273,150 KWH	(43,650) KWH
October	223,200	203,850	(19,350)
November	246,600	162,900	(83,700)
December	190,800	148,050	(42,750)
January	226,800	152,550	(74,250)
February	201,600	142,650	(58,950)
March	195,300	187,650	(7,650)
April	243,200	165,600	(77,600)
May	198,000	223,650	25,650
TOTAL	2,042,300 KWH	1,660,050 KWH	(382,250) KWH

Jones High School

Month	1977-78	1979-80	Difference
September	135,882 KWH	107,554 KWH	(28,328) KWH
October	82,612	101,406	18,794
November	78,792	68,300	(10,492)
December	60,158	61,664	1,506
January	81,002	66,206	(14,796)
February	87,860	84,270	(3,590)
March	65,872	73,546	7,674
April	89,450	54,318	(35,132)
May	121,740	71,775	(49,965)
TOTAL	803,368 KWH	689,039 KWH	(114,329) KWH

APPENDIX I
(continued)

Oak Ridge High School

Month	1977-78	1979-80	Difference
September	318,600 KWH	234,900 KWH	(83,700) KWH
October	341,100	186,300	(154,800)
November	296,100	330,300	34,200
December	277,200	341,100	63,900
January	242,100	32,400	(209,700)
February	269,100	238,500	(30,600)
March	273,600	202,500	(71,100)
April	235,800	197,100	(38,700)
May	234,900	223,200	(11,700)
TOTAL	2,488,500 KWH	1,986,300 KWH	(502,200) KWH

West Orange High School

Month	1977-78	1979-80	Difference
September	423,000 KWH	373,500 KWH	(49,500) KWH
October	333,000	341,200	8,200
November	298,800	245,200	(53,600)
December	243,000	203,600	(39,400)
January	309,600	200,100	(109,500)
February	302,200	247,800	(54,400)
March	302,400	260,700	(41,700)
April	300,600	217,000	(83,600)
May	376,198	333,900	(42,298)
TOTAL	2,888,798 KWH	2,423,000 KWH	(465,798) KWH

Winter Park High School

Month	1977-78	1979-80	Difference
September	409,000 KWH	378,000 KWH	(31,000) KWH
October	379,000	407,000	28,000
November	368,000	362,000	(6,000)
December	351,000	355,000	4,000
January	305,000	363,000	58,000
February	312,000	371,000	59,000
March	260,000	371,000	111,000
April	308,000	352,000	44,000
May	336,000	427,000	91,000
TOTAL	3,028,000 KWH	3,386,000 KWH	358,000 KWH

APPENDIX J

INDIVIDUAL ADULT VOCATIONAL-TECHNICAL SCHOOL ELECTRIC ENERGY CONSUMPTION BY MONTH 9/1/77-5/31/78 COMPARED TO 9/1/79-5/31/80

McCoy Vocational-Technical School

Month	1977-78	1979-80	Difference
September	47,031 KWH	51,615 KWH	4,584 KWH
October	33,984	53,730	19,746
November	26,894	37,670	10,776
December	21,620	21,458	(162)
January	17,070	14,013	(3,057)
February	19,128	22,403	3,275
March	19,463	25,175	5,712
April	25,196	37,940	12,744
May	43,884	48,513	4,629
TOTAL	254,270 KWH	312,517 KWH	58,247 KWH

Orange County Vocational-Technical School

Month	1977-78	1979-80	Difference
September	59,035 KWH	48,482 KWH	(10,553) KWH
October	34,291	46,058	11,767
November	31,865	33,077	1,212
December	21,780	25,610	3,830
January	23,659	25,836	2,177
February	26,047	28,956	2,909
March	28,980	33,528	4,548
April	29,006	31,402	2,396
May	47,746	46,800	(946)
TOTAL	302,409 KWH	319,749 KWH	17,340 KWH

Webster Adult Vocational-Technical School

Month	1977-78	1979-80	Difference
September	74,550 KWH	56,700 KWH	(17,850) KWH
October	58,050	53,400	(4,650)
November	40,650	60,900	20,250
December	39,150	16,800	(22,350)
January	40,950	34,800	(6,150)
February	57,750	52,500	(5,250)
March	44,400	39,750	(4,650)
April	42,450	25,950	(16,500)
May	52,350	45,300	(7,050)
TOTAL	450,300 KWH	386,100 KWH	(64,200) KWH

APPENDIX J
(continued)

Westside Adult Vocational-Technical School

Month	1977-78	1979-80	Difference
September	71,866 KWH	77,416 KWH	5,550 KWH
October	57,706	62,416	4,710
November	55,966	55,066	(900)
December	47,446	45,886	(1,560)
January	53,806	50,956	(2,850)
February	60,556	50,070	(10,486)
March	61,306	45,540	(15,766)
April	50,296	40,710	(9,586)
May	73,186	64,080	(9,106)
TOTAL	532,134 KWH	492,140 KWH	(39,994) KWH

APPENDIX K
ADJUSTMENTS DUE TO CHANGES AT INDIVIDUAL SCHOOLS USED TO COMPUTE MONETARY INCENTIVE AWARD

	1977-78 Enrollment	1979-80 Enrollment	Adjustment Factor	1977-78 Sq. Footage	1979-80 Sq. Footage	Adjustment Factor	1977-78 Hrs. of Operation	1979-80 Hrs. of Operation	Adjustment Factor
Elementary Schools									
Aloma	702	543	.77	42,183	42,439	1.01	42.5	42.5	1.00
Apopka	648	686	1.06	34,660	34,660	1.00	42.5	42.5	1.00
Audubon Park	501	572	1.14	63,295	63,353	1.00	42.5	42.5	1.00
Azalea Park	685	665	.97	48,627	48,627	1.00	42.5	42.5	1.00
Blankner	704	683	.97	61,811	61,811	1.00	42.5	42.5	1.00
Bonneville	431	501	1.16	36,958	36,958	1.00	45.0	45.0	1.00
Brookshire	525	494	.94	41,927	41,975	1.00	42.5	42.5	1.00
Catalina	631	661	1.05	42,494	42,494	1.00	46.3	46.3	1.00
Cheney	1,140	964	.85	47,051	47,255	1.00	42.5	42.5	1.00
Chickasaw	939	900	.96	42,380	42,380	1.00	42.5	42.5	1.00
Columbia	642	683	1.06	44,840	44,840	1.00	42.5	42.5	1.00
Conway	738	694	.95	51,745	51,905	1.00	42.5	42.5	1.00
Cypress Park	283	295	1.04	18,237	18,237	1.00	42.5	42.5	1.00
Dillard Street	564	564	1.00	52,599	52,599	1.00	42.5	42.5	1.00
Dommerich	475	613	1.30	51,055	51,055	1.00	40.0	40.0	1.00
Dover Shores	780	832	1.07	48,182	48,182	1.00	42.5	42.5	1.00
Dream Lake	612	598	.98	58,115	58,115	1.00	42.5	42.5	1.00
Durrance	642	663	1.04	59,865	59,865	1.00	42.5	42.5	1.00
Eccleston	642	615	.96	53,702	53,702	1.00	42.5	42.5	1.00
Engelwood	727	926	1.28	44,551	44,551	1.00	42.5	42.5	1.00
Fern Creek	667	695	1.05	56,660	56,660	1.00	42.5	42.5	1.00
Grand Avenue	548	577	1.05	34,945	34,945	1.00	42.5	42.5	1.00
Hiawassee	717	651	.91	37,713	37,713	1.00	42.5	42.5	1.00
Hillcrest	443	512	1.16	28,101	28,101	1.00	42.5	42.5	1.00

APPENDIX K

(continued)

	1977-78 Enroll-ment	1979-80 Enroll-ment	Adjust-ment Factor	1977-78 Sq. Footage	1979-80 Sq. Footage	Adjust-ment Factor	1977-78 Hrs. of Opera-tion	1979-80 Hrs. of Opera-tion	Adjust-ment Factor
Ivey Lane	910	778	.85	40,616	40,616	1.00	42.5	42.5	1.00
Kaley	313	351	1.13	31,436	31,436	1.00	42.5	42.5	1.00
Killarney	608	609	1.00	35,967	35,967	1.00	42.5	42.5	1.00
Lake Como	672	632	.95	49,624	49,624	1.00	42.5	42.5	1.00
Lake Silver	605	676	1.12	51,240	51,240	1.00	40.0	40.0	1.00
Lake Sybelia	530	476	.90	44,895	45,163	1.01	42.5	42.5	1.00
Lake Weston	856	656	.77	47,135	47,135	1.00	40.0	40.0	1.00
Lakemont	742	602	.81	60,381	60,381	1.00	42.5	42.5	1.00
Lancaster	704	675	.96	34,146	34,146	1.00	42.5	42.5	1.00
Lockhart	435	439	1.01	38,428	38,428	1.00	40.0	40.0	1.00
Lovell	724	705	.98	49,883	49,883	1.00	42.5	42.5	1.00
Maxey	337	329	.97	35,384	35,384	1.00	40.0	40.0	1.00
McCoy	750	790	1.05	47,248	47,248	1.00	42.5	42.5	1.00
Oak Hill	617	621	1.01	44,147	44,147	1.00	42.5	42.5	1.00
Orange Center	713	739	1.04	42,002	42,002	1.00	42.5	42.5	1.00
Orlo Vista	441	385	.88	33,882	33,882	1.00	42.5	42.5	1.00
Palmetto	794	703	.89	44,147	44,147	1.00	45.0	45.0	1.00
Pershing	659	603	.92	48,598	48,598	1.00	42.5	42.5	1.00
Pinar	653	845	1.30	44,147	44,147	1.00	42.5	42.5	1.00
Pine Hills	579	645	1.12	50,994	50,994	1.00	42.5	42.5	1.00
Pineloch	547	536	.98	53,031	53,031	1.00	42.5	42.5	1.00
Princeton	453	511	1.13	31,834	31,834	1.00	42.5	42.5	1.00
Mollie Ray	583	654	1.13	50,978	50,978	1.00	45.0	45.0	1.00
Richmond Heights	450	403	.90	35,887	35,887	1.00	42.5	42.5	1.00
Ridgewood Park	659	560	.85	41,108	41,108	1.00	40.0	40.0	1.00
Riverside	542	617	1.14	27,682	27,682	1.00	42.5	42.5	1.00

APPENDIX K

(continued)

	1977-78 Enroll-ment	1979-80 Enroll-ment	Adjust-ment Factor	1977-78 Sq. Footage	1979-80 Sq. Footage	Adjust-ment Factor	1977-78 Hrs. of Opera-tion	1979-80 Hrs. of Opera-tion	Adjust-ment Factor
Rock Lake	498	405	.81	35,350	35,350	1.00	42.5	42.5	1.00
Rolling Hills	772	816	1.06	34,420	34,420	1.00	42.5	42.5	1.00
Sadler	757	655	.87	41,275	41,275	1.00	45.0	45.0	1.00
Shenandoah	743	696	.94	43,323	43,323	1.00	42.5	42.5	1.00
Spring Lake	796	722	.91	40,616	40,616	1.00	42.5	42.5	1.00
Tangelo Park	727	539	.75	49,158	49,158	1.00	42.5	42.5	1.00
Tildenville	345	359	1.05	28,799	28,799	1.00	46.0	46.0	1.00
Union Park	799	833	1.05	48,168	48,168	1.00	42.5	42.5	1.00
Washington Shores	602	521	.87	44,438	44,438	1.00	40.0	40.0	1.00
Wheatley	1,006	943	.94	83,800	83,800	1.00	42.5	42.5	1.00
Windermere	711	622	.88	45,027	45,027	1.00	40.0	40.0	1.00
Winegard	747	827	1.11	44,851	44,851	1.00	42.5	42.5	1.00
Zellwood	538	564	1.05	28,936	28,936	1.00	42.5	42.5	1.00
Special Education Centers									
Forrest Park	131	122	.94	29,059	29,059	1.00	42.5	42.5	1.00
Gateway	243	152	.63	36,747	36,747	1.00	42.5	42.5	
Magnolia	266	257	.97	35,503	35,503	1.00	42.5	42.5	1.00

APPENDIX K

(continued)

	1977-78 Enroll-ment	1979-80 Enroll-ment	Adjust-ment Factor	1977-78 Sq. Footage	1979-80 Sq. Footage	Adjust-ment Factor	1977-78 Hrs. of Opera-tion	1979-80 Hrs. of Opera-tion	Adjust-ment Factor
Junior High Schools									
Apopka	1,601	1,431	.89	158,766	158,766	1.00	51.0	51.0	1.00
Carver	895	800	.89	77,697	77,697	1.00	50.5	50.5	1.00
Conway	1,277	1,167	.92	100,023	100,023	1.00	50.5	50.5	1.00
Glenridge	1,274	1,068	.84	94,523	94,523	1.00	42.5	42.5	1.00
Howard	903	986	1.10	124,395	124,395	1.00	45.5	45.5	1.00
Jackson	1,209	1,038	.86	81,511	81,511	1.00	45.0	45.0	1.00
Lakeview	820	865	1.06	106,590	106,590	1.00	42.5	42.5	1.00
Lee	1,069	985	.93	104,889	104,889	1.00	50.0	50.0	1.00
Liberty	1,025	1,499	1.47	128,060	128,060	1.00	45.0	45.0	1.00
Lockhart	955	872	.91	76,238	76,238	1.00	45.0	45.0	1.00
Maitland	771	809	1.05	95,308	112,202	1.18	45.0	49.5	1.10
Meadowbrook	1,349	1,357	1.00	90,576	90,576	1.00	45.0	45.0	1.00
Memorial	1,005	998	.99	98,690	98,690	1.00	42.5	42.5	1.00
Ocoee	728	726	1.00	75,454	75,454	1.00	45.0	45.0	1.00
Robinswood	1,167	1,172	1.00	135,179	135,179	1.00	45.0	45.0	1.00
Union Park	1,324	1,258	.95	91,998	91,998	1.00	42.5	42.5	1.00
Walker	1,073	1,077	1.00	117,836	117,836	1.00	43.0	43.0	1.00
Westridge	1,174	1,069	.92	125,380	125,380	1.00	45.0	45.0	1.00
Winter Park	884	745	.85	106,998	106,998	1.00	45.0	45.0	1.00
Senior High Schools									
Apopka	1,225	1,592	1.27	209,700	212,932	1.02	40.0	42.5	1.06
Boone	2,115	1,883	.89	204,241	205,320	1.01	53.0	56.0	1.06

APPENDIX K

(continued)

	1977-78 Enroll-ment	1979-80 Enroll-ment	Adjust-ment Factor	1977-78 Sq. Footage	1979-80 Sq. Footage	Adjust-ment Factor	1977-78 Hrs. of Opera-tion	1979-80 Hrs. of Opera-tion	Adjust-ment Factor
Colonial	3,252	3,401	1.05	179,317	179,317	1.00	55.0	55.0	1.00
Edgewater	1,995	1,832	.92	181,384	181,384	1.00	54.0	54.0	1.00
Evans	2,921	2,584	.89	215,206	215,206	1.00	58.5	58.5	1.00
Jones	784	855	1.13	161,251	161,251	1.00	45.5	45.5	1.00
Oak Ridge	3,088	2,959	.95	222,873	222,873	1.00	55.0	55.0	1.00
West Orange	1,325	1,863	1.41	201,330	205,418	1.03	45.0	45.0	1.00
Winter Park	2,556	2,363	.92	323,711	323,711	1.00	64.0	64.0	1.00
Adult Vocational-Technical Schools									
McCoy	175	300	1.71	68,913	68,913	1.00	59.5	59.5	1.00
Orange County	628	736	1.17	57,847	57,847	1.00	59.5	59.5	1.00
Webster	1,364	1,434	1.06	41,101	41,437	1.01	59.5	59.5	1.00
Westside	563	565	1.00	68,356	68,932	1.01	59.5	59.5	1.00

APPENDIX L

SPECIAL INCENTIVE AWARDS GRANTED TO THE SCHOOLS THAT SAVED THE GREATEST AMOUNT OF ELECTRIC ENERGY FROM 9/1/79 THROUGH 5/31/80

School	Amount of Electric Energy Saved[a]	Amount of Special Award Granted
Winegard Elementary	222,777 KWH	$ 400
McCoy Elementary	219,043 KWH	200
Magnolia Special Education	215,049 KWH	100
Palmetto Elementary	180,720 KWH	50
Westridge Junior High	874,552 KWH	400
Liberty Junior High	563,598 KWH	200
West Orange High	676,478 KWH	400
Total	2,952,217 KWH	$1,750

[a] Amounts are the base savings in KWH adjusted by the selected adjustment factors listed in Appendix K.

APPENDIX M

PERCENTAGE DISTRIBUTION OF LOCAL SCHOOL ALLOCATIONS OF INCENTIVE AWARD FUNDS RECEIVED

School	Instructional Items					Support Items			
	Audio Visual Materials	Printed Materials	Equipment	Supplemental Materials/ Equipment	Total Instructional	Facility Construction Renovation	Improvement of Outdoor Areas	Student Furniture	Total Support
Elementary Schools									
Aloma				100%	100%				
Apopka (No incentive earned)									
Audubon Park			100%		100%				
Azalea Park			80%		80%			20%	20%
Blankner				100%	100%				
Bonneville	4%		72%	4%	80%		20%		20%
Brookshire			64%	36%	100%				
Catalina		70%		30%	100%				
Cheney								100%	100%
Chickasaw				100%	100%				
Columbia		25%		75%	100%				
Conway			50%	50%	100%				
Cypress Park (No incentive earned)									
Dillard Street				100%	100%				
Dommerich	25%		75%		100%				
Dover Shores								100%	100%
Dream Lake			100%		100%				
Durrance	100%				100%				
Eccleston			75%	25%	100%				
Engelwood	26%		67%	7%	100%				

APPENDIX M

(continued)

School	Instructional Items					Support Items			
	Audio Visual Materials	Printed Materials	Equipment	Supplemental Materials/ Equipment	Total Instructional	Facility Construction Renovation	Improvement of Outdoor Areas	Student Furniture	Total Support
Fern Creek	70%		30%		100%				
Grand Avenue (No incentive earned)									
Hiawassee	100%				100%				
Hillcrest			78%		78%			22%	22%
Ivey Lane (No incentive earned)									
Kaley				100%	100%				
Killarney				100%	100%				
Lake Como			100%		100%				
Lake Silver				100%	100%				
Lake Sybelia	100%				100%				
Lake Weston	75%		25%		100%				
Lakemont	100%				100%				
Lancaster	80%				80%			20%	20%
Lockhart		100%			100%				
Lovell	65%	15%		20%	100%				
Maxey	34%			66%	100%				
McCoy				9%	9%		81%	10%	91%
Oak Hill	75%			25%	100%				
Orange Center (No incentive earned)									
Orlo Vista	100%				100%				
Palmetto	10%		43%	34%	87%	9%		4%	13%
Pershing	100%				100%				
Pinar (No incentive earned)									
Pine Hills			100%		100%				

APPENDIX M

(continued)

School	Instructional Items					Support Items			
	Audio Visual Mater- ials	Printed Materials	Equip- ment	Supple- mental Materials/ Equipment	Total Instruc- tional	Facility Construc- tion Reno- vation	Improve- ment of Outdoor Areas	Student Furni- ture	Total Support
Pineloch			100%		100%				
Princeton			80%	20%	100%				
Mollie Ray			100%		100%				
Richmond Heights	30%			70%	100%				
Ridgewood Park			100%		100%				
Riverside			100%		100%				
Rock Lake	100%				100%				
Rolling Hills	25%		50%	25%	100%				
Sadler	100%				100%				
Shenandoah			100%		100%				
Spring Lake			100%		100%				
Tangelo Park				100%	100%				
Tildenville		28%		72%	100%				
Union Park	26%		46%	28%	100%				
Washington Shores	82%		18%		100%				
Wheatley	100%				100%				
Windermere	25%		38%	37%	100%				
Winegard	27%			3%	30%			70%	70%
Zellwood				100%	100%				
Special Education Centers									
Forrest Park (No incentive earned)									
Gateway	19%		5%	76%	100%				
Magnolia				100%	100%				

APPENDIX M

(continued)

School	Instructional Items					Support Items			
	Audio Visual Materials	Printed Materials	Equipment	Supplemental Materials/ Equipment	Total Instructional	Facility Construction Renovation	Improvement of Outdoor Areas	Student Furniture	Total Support
Junior High Schools									
Apopka			100%		100%				
Carver	100%				100%				
Conway	28%		15%	39%	82%	10%		8%	18%
Glenridge	100%				100%				
Howard			100%		100%				
Jackson						100%			100%
Lakeview				100%	100%				
Lee	35%		14%		49%	51%			51%
Liberty		34%	66%		100%				
Lockhart	100%				100%				
Maitland		100%			100%				
Meadowbrook	32%		38%		70%			30%	30%
Memorial (No incentive earned)									
Ocoee	20%				20%	27%		53%	80%
Robinswood (No incentive earned)									
Union Park (No incentive earned)									
Walker	35%		20%		55%		45%		45%
Westridge	16%		40%	17%	73%		24%	3%	27%
Winter Park	30%	40%		30%	100%				

APPENDIX M

(continued)

School	Instructional Items					Support Items			
	Audio Visual Mater-ials	Printed Materials	Equip-ment	Supple-mental Materials/ Equipment	Total Instruc-tional	Facility Construc-tion Reno-vation	Improve-ment of Outdoor Areas	Student Furni-ture	Total Support
Senior High Schools									
Apopka							100%		100%
Boone	40%			45%	85%	15%			15%
Colonial								100%	100%
Edgewater	50%			50%	100%				
Evans			94%		94%			6%	6%
Jones		30%	70%		100%				
Oak Ridge			31%	27%	58%	14%		28%	42%
West Orange			100%		100%				
Winter Park (No incentive earned)									
Adult Vocational-Technical Schools									
McCoy (No incentive earned)									
Orange County (No incentive earned)									
Webster							50%	50%	100%
Westside	50%				50%		50%		50%

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BIOGRAPHICAL SKETCH

A native of Lake Orion, Michigan, Robert E. Cascaddan attended the Lake Orion Community Public Schools and graduated from Lake Orion High School in 1950. In 1954 he received a Bachelor of Arts degree from Stetson University with fields of study in education and the social sciences.

He accepted his first teaching position in the Orange County, Florida, Public School System as a fifth grade teacher at Conway Elementary School in 1955. While teaching Robert earned a Master of Arts degree from Stetson University with a major in educational administration and supervision. Upon receiving his master's degree in 1960 he continued teaching until he was appointed principal of Concord Park Elementary School, Orange County. In 1965 he accepted a district level position and between 1965 and 1969 served as the Supervisor of Health, Physical Education, and Drivers Education, the Director of Pupil Assignment and Research, and the Assistant Superintendent for Administration. He was appointed Deputy Superintendent for Support Services for Orange County in 1969.

His professional memberships include the American Association of School Administrators, Council of Educational Facility Planners, Phi Delta Kappa, Association of School Business Officials, National Environmental Health Association, Florida School Plant Managers Association, Florida School Plant Planners Association, and the American Association of School Personnel Administrators.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

Michael Y. Nunnery, Chairman
Professor of Educational
Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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December, 1980

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